

ENCLOSURE 1

CLASS 1 MODIFICATIONS FOR QUARTER ENDING SEPTEMBER 30, 2010

Ms. Greta P. Davis, Ecology
Consisting of 400 pages, including cover sheet

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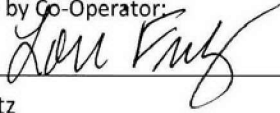
Hanford Facility RCRA Permit Modification Notification Forms

Permit Attachments

Index

Page 2 of 5: Permit Revision 8C, List of Attachments

Submitted by Co-Operator:

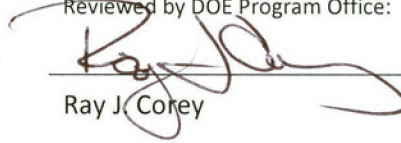


Lori L. Fritz

9.24.10

Date


Reviewed by DOE Program Office:



Ray J. Corey

10/5/10

Date

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Permit Revision 8C	Permit Part List of Attachments			
<u>Description of Modification:</u> Permit Revision 8C, List of Attachments:				
List of Attachments <p>The following listed documents are attached in their entirety. However, only those portions of the attachments specified in Parts I through VI are enforceable conditions of this Permit and subject to the permit modification requirements of Permit Condition I.C.3. Changes to portions of the attachments, which are not subject to the permit modification process, will be addressed in accordance with Permit Conditions I.E.8, I.E.11, I.E.13, I.E.15, through I.E.20, and I.E.22. Ecology has, as deemed necessary, modified specific language in these attachments. These modifications are described in the conditions (Parts I through VI), and thereby supersede the language of the attachment.</p> <p>Attachment 1 Hanford Federal Facility Agreement and Consent Order, (as amended) http://www.hanford.gov/tpa/coverpg.htm</p> <p>Attachment 2 Hanford Facility Legal Description, from Class ¹1 modification, dated January 7, 1999</p> <p>Attachment 3 Permit Applicability Matrix, dated March 2006 <u>Security, dated September 30, 2010</u></p> <p>Attachment 4 <i>Hanford Emergency Management Plan</i>, DOE/RL-94-02 Revision 2, as amended and approved modifications</p> <p>Attachment 5 Purgewater Management Plan, July 1990 <u>Hanford Facility Personnel Training Program, dated September 30, 2010</u></p> <p>Attachment 6 <u>Reports and Records, dated September 30, 2010</u> Hanford Well Maintenance and Inspection Plan, BHI-01265, Revision 0, May 1999</p> <p>Attachment 7 Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA, June 1990</p> <p><u>Attachment 8 Hanford Well Maintenance and Inspection Plan, BHI-01265, Revision 0, May 1999</u></p> <p><u>Attachment 9 Permit Applicability Matrix, dated September 30, 2010</u></p> <p><u>Attachment 10 Purgewater Management Plan, July 1990</u></p> <p>Attachment 33 Hanford Facility Dangerous Waste Permit Application General Information Portion, DOE/RL-91-28, Revision 7, and approved modifications</p>				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1	Class 2	Class 3
		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.8 Enter wording of WAC 173-303-830, Appendix I Modification citation: Changes to remove permit conditions that are no longer applicable				
Modification Approved/Concur <input type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) <u>Reason for denial:</u>		Reviewed by Ecology: <div style="text-align: center;">  G. P. Davis </div> <div style="text-align: right;"> 9-28-10 Date </div>		

Hanford Facility RCRA Permit Modification

Permit Attachments

Remove and replace the following:

- Remove Permit Revision 8C, dated September 30, 2009, with Permit Revision 8C, dated September 30, 2010
- Remove Permit Attachment 3, dated March 2006 and replace with Permit Attachment 3, Security, dated September 30, 2010.
- Remove Permit Attachment 5, dated July 1990 and replace with Permit Attachment 5 dated September 30, 2010
- Removed Permit Attachment 6, dated May 1999 and replace with Permit Attachment 6, Reports and Records, dated September 30, 2010
- Insert Attachment 8, Hanford Well Maintenance and Inspection Plan, BHI-01265, Revision 0, May 1999
- Insert Attachment 9, Permit Applicability Matrix, dated September 30, 2010
- Insert Attachment 10, Purgewater Management Plan, July 1990

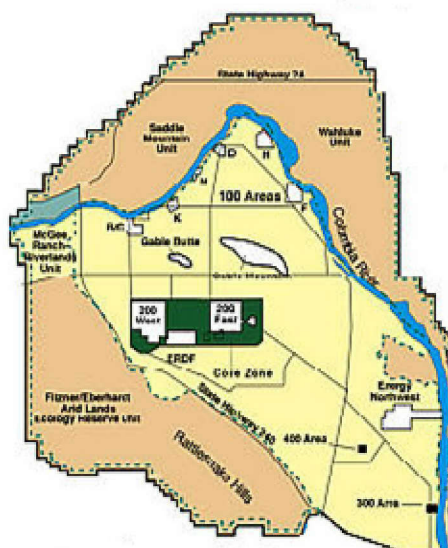
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Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion

Revision 8C

For the Treatment, Storage, and Disposal of Dangerous Waste



**Washington State Department of Ecology
Nuclear Waste Program**

September 2010

Permit Number: WA7 89000 8967
Revision Number: 8C

Class 1 Modification
September 30, 2010

For additional copies of this permit contact:

Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354-1670
509-372-7950

The Department of Ecology is an equal-opportunity agency and does not discriminate on the basis of race, creed, color disability, age, religion, national origin, sex, marital status, disabled-veteran status, Vietnam-era veteran status or sexual orientation.

For more information or if you have special accommodation needs, please contact the Nuclear Waste Program at (509) 372-7950.

Department of Ecology Headquarters telecommunications device for the deaf (TDD) number is: (360) 407-6006

**DANGEROUS WASTE PORTION OF THE
RESOURCE CONSERVATION AND RECOVERY ACT PERMIT
FOR THE TREATMENT, STORAGE, AND DISPOSAL OF DANGEROUS WASTE**

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Boulevard
Richland, Washington 99354
Telephone: 509-372-7950

Issued in accordance with the applicable provisions of the Hazardous Waste Management Act,
Chapter [70.105](#) Revised Code of Washington (RCW), and the regulations promulgated there under in
[Chapter 173-303](#) Washington Administrative Code (WAC).

ISSUED TO:

United States Department of Energy
Richland Operations Office
(Owner/Operator)
P.O. Box 550, MSIN A7-50
Richland, Washington 99352
Telephone: (509) 376-7395

Mission Support Alliance
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Richland, Washington 99354
Telephone: (509) 376-1310

Washington Closure Hanford, LLC
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2620 Fermi Avenue, MSIN H4-24
Richland, Washington 99354
Telephone: (509) 372-9951

Pacific Northwest National Laboratory
(Co-operator)
P.O. Box 999, MSIN K1-46
Richland, Washington 99352
Telephone: (509) 375-5911

United States Department of Energy
Office of River Protection
(Owner/Operator)
P.O. Box 450, MSIN H6-60
Richland, Washington 99352
Telephone: (509) 372-3062

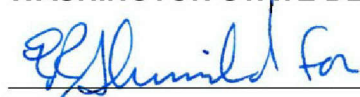
Bechtel National, Inc.
(Co-Operator)
2435 Stevens Center Place MSIN H4-02
Richland, Washington 99354
Telephone: (509) 371-2335

Washington River Protection Solutions, LLC
(Co-operator)
P.O. Box 1500, MSIN H6-63
Richland, Washington 99352
Telephone: (509) 372-9138

CH2MHILL Plateau Remediation Company
(Co-operator)
P.O. Box 1600, MSIN H7-30
Richland, Washington 99352
Telephone: (509) 376-0556

This Permit as modified on October 22, 2007, will remain in effect until reissuance of the
September 27, 2004 Permit, unless revoked and reissued under [WAC 173-303-830\(3\)](#), terminated under
[WAC 173-303-830\(5\)](#), or continued in accordance with [WAC 173-303-806\(7\)](#).

**ISSUED BY:
WASHINGTON STATE DEPARTMENT OF ECOLOGY**



Date: 10/17/07

Jane A. Hedges, Program Manager
Nuclear Waste Program, Department of Ecology

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List of Attachments

The following listed documents are attached in their entirety. However, only those portions of the attachments specified in Parts I through VI are enforceable conditions of this Permit and subject to the permit modification requirements of Permit Condition I.C.3. Changes to portions of the attachments, which are not subject to the permit modification process, will be addressed in accordance with Permit Conditions I.E.8, I.E.11, I.E.13, I.E.15, through I.E.20, and I.E.22. Ecology has, as deemed necessary, modified specific language in these attachments. These modifications are described in the conditions (Parts I through VI), and thereby supersede the language of the attachment.

- | | |
|---------------|---|
| Attachment 1 | Hanford Federal Facility Agreement and Consent Order, (as amended)
http://www.hanford.gov/tpa/coverpg.htm |
| Attachment 2 | Hanford Facility Legal Description, from Class ¹ 1 modification, dated January 7, 1999 |
| Attachment 3 | Security, dated September 30, 2010 |
| Attachment 4 | <i>Hanford Emergency Management Plan</i> , DOE/RL-94-02 Revision 2, as amended and approved modifications |
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| Attachment 10 | Purgewater Management Plan, July 1990 |

1 Introduction

2 Where information regarding treatment, management, and disposal of the radioactive source, byproduct
3 material, special nuclear material (as defined by the Atomic Energy Act of 1954, as amended) and/or the
4 radionuclide component of mixed waste has been incorporated into this permit, it is not incorporated for
5 the purpose of regulating the radiation hazards of such components under the authority of this permit or
6 [Chapter 70.105 RCW](#).

7 Pursuant to [Chapter 70.105 RCW](#), the Hazardous Waste Management Act (HWMA) of 1976, as
8 amended, [Chapter 70.105D RCW](#), the Model Toxics Control Act (MTCA), and regulations promulgated
9 there under by the Washington State Department of Ecology (hereafter called Ecology), codified in
10 [Chapter 173-303](#) Washington Administrative Code (WAC), Dangerous Waste Regulations, a Dangerous
11 Waste Permit is issued to the United States Department of Energy (USDOE) - Richland Operations Office
12 (RL) and Office of River Protection (ORP) [owner/operator], and its contractors [co-operators], Bechtel
13 National, Incorporated (BNI), CH2MHILL Plateau Remediation Company (CHPRC), Mission Support
14 Alliance, LLC (MSA)], Pacific Northwest National Laboratory (PNNL), Washington Closure
15 Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS) and hereafter called the
16 Permittees, for the treatment, storage, and disposal of dangerous waste at the Hanford Facility.

17 This Dangerous Waste Permit, issued in conjunction with the United States Environmental Protection
18 Agency's (hereafter called EPA) Hazardous and Solid Waste Amendments Portion of the Resource
19 Conservation and Recovery Act (RCRA) Permit for the Treatment, Storage, and Disposal (TSD) of
20 Hazardous Waste (HSWA Permit), constitutes the RCRA Permit for the Hanford Facility. Use of the
21 term "Permit" within the Dangerous Waste Permit will refer to the Dangerous Waste Permit, while use of
22 the term "Permit" within the HSWA Permit, will refer to the HSWA Permit. Use of the same term in both
23 the Dangerous Waste Permit and the HSWA Permit, will have the standard meaning associated with the
24 activities addressed by the permit in which the term is used. Such meanings will prevail, except where
25 specifically stated otherwise.

26 The Permittees will comply with all terms and conditions set forth in this Permit and those portions of the
27 Attachments that have been specifically incorporated into this Permit. When the Permit and the
28 Attachments (except Permit Attachment 1) conflict, the wording of the Permit will prevail. The Permit is
29 intended to be consistent with the terms and conditions of the Hanford Federal Facility Agreement and
30 Consent Order ([HFFACO, Permit Attachment 1](#)). The Permittees will also comply with all applicable
31 state regulations, including [Chapter 173-303 WAC](#).

32 Applicable state regulations are those which are in effect on the date of issuance, or as specified in
33 subsequent modifications of this Permit. In addition, applicable state regulations include any self-
34 implementing statutory provisions and related regulations which, according to the requirements of the
35 HWMA, as amended, or other law(s), are automatically applicable to the Permittees' dangerous waste
36 management activities, notwithstanding the conditions of this Permit.

37 This Permit is based upon the Administrative Record, as required by [WAC 173-303-840](#). The Permittees'
38 failure in the application, or during the Permit issuance process, to fully disclose all relevant facts, or the
39 Permittees' misrepresentation of any relevant facts at any time, will be grounds for the termination or
40 modification of this Permit and/or initiation of an enforcement action, including criminal proceedings.
41 The Permittees will inform Ecology of any deviation from the Permit conditions, or changes in the
42 information on which the application is based, which would affect either the Permittees' ability to
43 comply, or actual compliance with the applicable regulations or the Permit conditions, or which alters any
44 condition of this Permit in any way.

Ecology will enforce all conditions of this Permit for which the State of Washington is authorized, or which are "state-only" provisions (i.e., conditions broader in scope or more stringent than the federal RCRA program). Any challenges of any Permit condition may be appealed in accordance with [WAC 173-303-845](#). In the event that any Permit condition is challenged by any Permittee under [WAC 173-303-845](#), Ecology may stay any such Permit condition as it pertains to all Permittees, in accordance with the same terms of any stay it grants to the challenging Permittee. If such a stay is granted, it will constitute a "stay by the issuing agency" within the meaning of [RCW 43.21B.320\(1\)](#).

This Permit has been developed to allow a step-wise permitting process of the Hanford Facility to ensure the proper implementation of the [HFFACO](#). In order to accomplish this, this Permit consists of six (6) parts.

Part I, Standard Conditions, contains conditions which are similar to those appearing in all dangerous waste permits.

Part II, General Facility Conditions, combines typical dangerous waste permit conditions with those conditions intended to address issues specific to the Hanford Facility. Where appropriate, the general facility conditions apply to all final status dangerous waste management activities at the Facility. Where appropriate, the general facility conditions also address dangerous waste management activities which may not be directly associated with distinct TSD units, or which may be associated with many TSD units (i.e., spill reporting, training, contingency planning, etc.). Part II also includes conditions that address corrective action at solid waste management units and areas of concern.

Part III, Unit-Specific Conditions for Operating Units, contains those Permit requirements that apply to each individual TSD unit operating under final status. Conditions for each TSD unit are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is operated in an efficient and environmentally protective manner. Additional requirements may also be added when an operating unit ceases operations and undergoes closure.

Part IV, Unit-Specific Conditions for Corrective Action, contains those permit requirements which apply to specific RPP units that are undergoing corrective action under the [HFFACO](#). RPP units may include solid waste management units and other areas of concern (i.e., releases that are not at solid waste management units and do not constitute a solid waste management unit) that are undergoing corrective action. For The Comprehensive Environmental Response, Conservation, and Liability Act (CERCLA) and RCRA past practice (RPP) units identified in the [HFFACO](#), the corrective action conditions are structured around continued coordination with, and reliance on, the investigation and cleanup requirements established under the [HFFACO](#). For TSD units identified in the [HFFACO](#), the corrective action conditions contemplate use of closure and post-closure processes to satisfy corrective action.

Part V, Unit-Specific Conditions for Units Undergoing Closure, contains those requirements which apply to those specific TSD units, included in this part, that are undergoing closure. In accordance with Section 5.3 of the Action Plan of the [HFFACO](#), all TSD units that undergo closure, irrespective of permit status, will be closed pursuant to the authorized State Dangerous Waste Program in accordance with [WAC 173-303-610](#). Requirements for each TSD unit undergoing closure are found in a chapter dedicated to that TSD unit. These unit-specific chapters contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as additional requirements which are intended to ensure that each TSD unit is closed in an efficient and environmentally protective manner.

1 **Part VI, Unit-Specific Conditions for Units in Post-Closure**, contains those requirements which apply
2 to those specific units in this part that have completed modified or landfill closure requirements, and now
3 only need to meet Post-Closure Standards. As set forth in Section 5.3 of the Action Plan of the [HFFACO](#),
4 certain TSD units will be permitted for post-closure care pursuant to the authorized State Dangerous
5 Waste Program ([173-303 WAC](#)) and the Hazardous and Solid Waste Amendments. Requirements for
6 each unit undergoing post-closure care are found in a chapter, within this part, dedicated to that unit.
7 These unit specific chapters may contain references to Standard Conditions (Part I) and General
8 Conditions (Part II), as well as the unit specific conditions, all of which are intended to ensure the unit is
9 managed in an efficient, environmentally protective manner.

10

1 Unit Status Table

PERMIT REVISION	REVISION DATE	UNITS INCORPORATED		
Permit Revision 0	8/29/94	616 NDWSF, 305-B Storage Facility, 183-H SEB, 300 ASE, 2727-S, NRDWSF		
Permit Revision 1	4/28/95	Simulated High-Level Waste Slurry, 218-E-9 Borrow Pit Demo Site, 200 W Area Ash Pit Demo Site, 2101-M Pond, 216-B-3 Expansion Ponds		
Permit Revision 2	8/29/95	Hanford Patrol Academy Demolition Site, 105-DR Large Sodium Fire Facility, 304 Concretion Facility		
Permit Revision 3	11/25/96	4843 Alkali Metal Storage Facility, 3718-F Alkali Metal Treatment & Storage Facility, 303-K Storage Facility, 300 APT		
Permit Revision 4	1/28/98	PUREX Storage Tunnels, LERF & 200 Area ETF, 242-A Evaporator, 325 HWTUs		
Permit Revision 5	5/18/99	100 D Ponds, 1301-N & 1325-Liquid Waste Disposal Facility, 1324-N Surface Impoundment, 1324-NA Percolation Pond		
Permit Revision 6	3/28/00	Permit Condition II.Y, Corrective Action		
Permit Revision 7	2/27/01	Waste Treatment & Immobilization Plant, 300 Area WATS		
Permit Revision 8	9/23/04	No new units, modification updates		
Permit Revision 8A	3/6/06	Integrated Disposal Facility		
Permit Revision 8B	1/2007	331-C Storage Unit, PFP Treatment Unit, 241-Z Treatment & Storage Tanks, 303-M Oxide Facility		
Permit Revision 8C	8/2007	400 Area Waste Management Unit, 224-T TRUSAF		
UNIT		Permit Revision		Comments/History
		Incorporated	Retired	
PART III, OPERATING UNITS				
616 Nonradioactive DWSF		Rev. 6	Rev. 7	Closed, 9/5/01
242-A Evaporator		Rev. 4		
305-B Storage Facility		Rev. 0		Closed, 7/2/07
325 Hazardous Waste Treatment Units		Rev. 4		RLWT procedural closure, 9/04
LERF & 200 Area ETF		Rev. 4		
PUREX Storage Tunnels		Rev. 3		
Waste Treatment and Immobilization Plant		Rev. 7		Permitted unit under construction
Integrated Disposal Facility		Rev. 8A		
331-C Storage Unit		Rev. 8B		
400 Area Waste Management Unit		Rev. 8C		
PART IV, CORRECTIVE ACTION				
100-NR-1 Operable Unit		Rev. 6		
100-NR-2 Operable Unit		Rev. 6	Rev. 8C	Retired, 9/30/09
PART V, UNDERGOING CLOSURE UNITS				
100-D Ponds		Rev. 5	Rev. 6	Closed, 8/9/99
105 DR Large Sodium Fire Facility		Rev. 2	Rev. 6	Closed, 7/1/04
1301-N Liquid Waste Disposal Facility		Rev. 5		
1324-N Surface Impoundment		Rev. 5		
1324-NA Percolation Pond		Rev. 5		
1325-N Liquid Waste Disposal Facility		Rev. 5		
200 West Area Ash Pit Demo Site		Rev. 1	Rev. 6	Closed, 11/28/95
2101-M Pond		Rev. 1	Rev. 6	Closed, 11/28/95
216-B-3 Expansion Ponds		Rev. 1	Rev. 6	Closed, 7/31/95
218-E-8 Borrow Demolition Site		Rev. 1	Rev. 6	Closed, 11/28/95
2727-S Storage Facility		Rev. 0	Rev. 6	Closed, 7/31/95
300 Area Solvent Evaporator		Rev. 0	Rev. 6	Closed, 7/31/95
300 Area Waste Acid Treatment System		Rev. 6	Rev. 8B	Closed, 1/21/05
303-K Storage Facility		Rev. 4	Rev. 6	Closed, 7/22/02
304 Concretion Facility		Rev. 2	Rev. 6	Closed, 1/21/96
311 Tanks		Rev. 6	Rev. 7	Closed, 5/20/02. 300 Area WATS Part A
3718-F Alkali Metal Treatment /Storage		Rev. 3	Rev. 6	Closed, 8/4/98
4843 Alkali Metal Storage Facility		Rev. 3	Rev. 6	Closed, 4/14/97
Hanford Patrol Academy Demo Site		Rev. 2	Rev. 6	Closed, 11/28/95
Simulated High Level Waste Slurry		Rev. 1	Rev. 6	Closed, 9/6/95

PFP Treatment Unit (HA-20MB)	Rev. 8B	Rev. 8B	Closed, 2/8/05.
241-Z Treatment and Storage Tanks	Rev. 8B	Rev. 8B	Closed 2/22/07
303-M Oxide Facility	Rev. 8B	Rev. 8B	Closed; 6/15/06
224-T Transuranic Waste Storage and Assay Facility	Rev. 8C		
PART VI, POSTCLOSURE UNITS			
183-H Solar Evaporation Basin	Rev 4		
300 Area Process Trenches	Rev 3		
PROCEDURALLY CLOSED			
216-U-12 Crib	N/A	N/A	Closed, 7/19/07
221-T Test Facility	N/A	N/A	Closed, 2/22/99
2727-WA SRE Sodium Storage Bldg	N/A	N/A	Closed, 2/22/99
324 Pilot Plant	N/A	N/A	Closed, 6/9/97
332 Storage Facility	N/A	N/A	Closed, 4/21/97
437 Maintenance and Storage Facility	N/A	N/A	Closed, 9/11/03
Biological Treatment Test Facilities	N/A	N/A	Closed, 12/10/96
Physical/Chemical Treatment Test Facilities	N/A	N/A	Closed, 5/13/96
Sodium Storage/Sodium Reaction	N/A	N/A	Closed, 9/17/03
Thermal Treatment Test Facilities	N/A	N/A	Closed, 5/13/96
TO BE INCORPORATED			
1706-KE Waste Treatment System			
207-A South Retention Basin			
216-A-10 Crib			
216-A-29 Ditch			
216-A-36B Crib			
216-A-37-1 Crib			
216-B-3 Main Pond			
216-B-63 Trench			
216-S-10 Pond & Ditch			
222-S Dangerous & Mixed Waste TSD Unit			
241-CX Tank System			
600 Area Purge Water Storage and Treatment Facility			
Central Waste Complex			
Contact Handled Transuranic Mixed Waste Packaging and Interim Storage Facility			
DST System/204-AR Waste Unloading Station			
Grout Treatment Facility			
Hexone Storage & Treatment Facility			
IHLW Interim Storage/Canister Storage Building			
Low-Level Burial Grounds			
Nonradioactive Dangerous Waste Landfill			
Single-Shell Tank System			
T Plant Complex			
Waste Encapsulation and Storage Facility			
Waste Receiving and Processing Facility			
TRANSITION UNDER HFFACO ACTION PLAN, SECTION 8 (Will not be incorporated into Permit)			
B Plant Complex			
PUREX Plant			

Definitions

Except with respect to those terms specifically defined below, all definitions contained in the [HFFACO](#), May 1989, as amended, and in [WAC 173-303-040](#) and other portions of [Chapter 173-303 WAC](#) are hereby incorporated, in their entirety, by reference into this Permit. For terms defined in both [Chapter 173-303 WAC](#) and the [HFFACO](#), the definitions contained in [Chapter 173-303 WAC](#) will control within this Permit. Nonetheless, this Permit is intended to be consistent with the [HFFACO](#).

Where terms are not defined in the regulations, the Permit, or the [HFFACO](#), a standard dictionary reference, or the generally accepted scientific or industrial meaning of the terms will define the meaning associated with such terms.

As used in this Permit, words in the masculine gender also include the feminine and neuter genders, words in the singular include the plural, and words in the plural include the singular.

The following definitions apply throughout this Permit:

The term "**Area of Concern**" means any area of the Facility where a release of dangerous waste or dangerous constituents has occurred, is occurring, is suspected to have occurred, or threatens to occur.

The term "**Contractor(s)**" means, unless specifically identified otherwise in this Permit, or Attachments, Bechtel National, Inc. (BNI), CH2M HILL Plateau Remediation Company, Inc. (CHPRC), Mission Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (PNNL), Washington Closure Hanford, LLC (WCH), and Washington River Protection Solutions, LLC (WRPS).

The term "**Critical Systems**" as applied to determining whether a Permit modification is required, means those specific portions of a TSD unit's structure, or equipment, whose failure could lead to the release of dangerous waste into the environment, and/or systems which include processes which treat, transfer, store, or dispose of regulated wastes. A list identifying the critical systems of a specific TSD unit may be developed and included in Part III, V, and/or VI of this Permit. In developing a critical system list, or in the absence of a critical system list, [WAC 173-303-830](#) Modifications will be considered.

The term "**Dangerous Constituent**" means any constituent identified in [WAC 173-303-9905](#) or [40 CFR Part 264 Appendix IX](#), any constituent which caused a waste to be listed or designated as dangerous under [Chapter 173-303 WAC](#), and any constituents within the meaning of hazardous substance at [RCW 70.105D.020\(7\)](#).

The term "**Dangerous Waste**" means those solid wastes designated under [Chapter 173-303 WAC](#) as dangerous or extremely hazardous waste. As used in the Permit, the phrase "dangerous waste" will refer to the full universe of wastes regulated by [Chapter 70.105 RCW](#) and [Chapter 173-303 WAC](#) (including dangerous waste, hazardous waste, extremely hazardous waste, mixed waste, and acutely hazardous waste).

The term "**Days**" means calendar days, unless specifically identified otherwise. Any submittal, notification, or recordkeeping requirement that would be due, under the Conditions of this Permit, on a Saturday, Sunday, or federal, or state holiday, will be due on the following business day, unless specifically stated otherwise in the Permit.

The term "**Director**" means the Director of the Washington State Department of Ecology, or a designated representative. The Program Manager of the Nuclear Waste Program (with the address as specified on page one [1] of this Permit) is a duly authorized and designated representative of the Director for purposes of this Permit.

The term "**Ecology**" means the Washington State Department of Ecology (with the address as specified on page one [1] of this Permit).

1 The term "**Facility**" means all contiguous land, structures, other appurtenances, and improvements on the
2 land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous
3 waste. The legal and physical description of the Facility is set forth in Permit Attachment 2.

4 The term "**Facility**" for the purposes of corrective action under Permit Condition II.Y, means all
5 contiguous property under the control of the Permittees and all property within the meaning of "facility"
6 at [RCW 70.105D.020\(3\)](#) as set forth in Permit Attachment 2.

7 The term "**HFFACO**" means the Hanford Federal Facility Agreement and Consent Order, as amended
8 (Commonly referred to as Tri-Party Agreement [TPA]).

9 The term "**Permittees**" means the United States Department of Energy (owner/operator), Bechtel
10 National, Inc. (Co-operator), CH2M HILL Plateau Remediation Company (Co-operator), Mission
11 Support Alliance, LLC (MSA), Pacific Northwest National Laboratory (Co-operator), Washington
12 Closure Hanford, LLC (Co-operator), Washington River Protection Solutions, LLC.

13 The term "**Permittees**" for purposes of corrective action under Permit Condition II.Y means only the
14 United States Department of Energy (owner/operator).

15 The term "**Raw Data**" means the initial value of analog or digital instrument output, and/or manually
16 recorded values obtained from measurement tools or personal observation. These values are converted
17 into reportable data (e.g., concentration, percent moisture) via automated procedures and/or manual
18 calculations.

19 The term "**RCRA Permit**" means the Dangerous Waste Portion of the RCRA Permit for the Treatment,
20 Storage, and Disposal of Dangerous Waste (Dangerous Waste Permit) issued by the Washington State
21 Department of Ecology, pursuant to [Chapter 70.105 RCW](#) and [Chapter 173-303 WAC](#), coupled with the
22 HSWA Portion of the RCRA Permit for the Treatment, Storage, and Disposal of Hazardous Waste
23 (HSWA Permit) issued by EPA, Region 10, pursuant to [42 U.S.C. 6901 et seq.](#) and [40 CFR Parts 124](#) and
24 [270](#).

25 The term "**Reasonable Times**" means normal business hours; hours during which production, treatment,
26 storage, construction, disposal, or discharge occurs, or times when Ecology suspects a violation requiring
27 immediate inspection.

28 The term "**Release**" means any intentional or unintentional spilling, leaking, pouring, emitting, emptying,
29 discharging, injecting, pumping, escaping, leaching, dumping, or disposing of dangerous constituents into
30 the environment and includes the abandonment or discarding of barrels, containers, and other receptacles
31 containing dangerous waste or dangerous constituents, and includes any releases within the meaning of
32 release at [RCW 70.105D.020\(20\)](#).

33 The term "**Significant Discrepancy**" in regard to a manifest or shipping paper, means a discrepancy
34 between the quantity or type of dangerous waste designated on the manifest, or shipping paper, and the
35 quantity or type of dangerous waste a TSD unit actually receives. A significant discrepancy in quantity is
36 a variation greater than ten (10) percent in weight for bulk quantities (e.g., tanker trucks, railroad tank
37 cars, etc.), or any variation in piece count for nonbulk quantities (i.e., any missing container or package
38 would be a significant discrepancy). A significant discrepancy in type is an obvious physical or chemical
39 difference which can be discovered by inspection or waste analysis (e.g., waste solvent substituted for
40 waste acid).

41 The term "**Solid Waste Management Unit (SWMU)**" means any discernible location at the Facility
42 where solid wastes have been placed at any time, irrespective of whether the location was intended for the
43 management of solid or dangerous waste, and includes any area at the Facility at which solid wastes have
44 been routinely and systematically released (for example through spills), and includes dangerous waste
45 treatment, storage, and disposal units.

1 The term "**Unit**" or "**TSD unit**", as used in Parts I through VI of this Permit, means the contiguous area
2 of land on or in which dangerous waste is placed, or the largest area in which there is a significant
3 likelihood of mixing dangerous waste constituents in the same area. A TSD unit, for purposes of this
4 Permit, is a subgroup of the Facility which has been identified in a Hanford Facility Dangerous Waste
5 Part A Form.

6

Acronyms

1		
2	ALARA	As Low As Reasonably Achievable
3	AMSF	Alkali Metal Storage Facility
4	APDS	Ash Pit Demolition Site
5	APP	Used to Denote Appendix Page Numbers
6	APT	Area Process Trenches
7	ARAR	Applicable, Relevant, and Appropriate Requirements
8	BNI	Bechtel National, Inc
9	BPDS	Borrow Pit Demolition Site
10	CD/RR	Chemical Disposal/Recycle Request
11	CERCLA	Comprehensive Environmental Response Compensation and Liability Act of
12		1980 (as Amended by the Superfund Reauthorization Act of 1986)
13	CFR	Code of Federal Regulations
14	CHPRC	CH2M HILL Plateau Remediation Company
15	CIP	Construction Inspection Plan
16	CLARC	Cleanup Levels and Risk Calculations
17	CLP	Contract Laboratory Program
18	COC	Chemical Contaminants of Concern
19	CPP	CERCLA Past Practice
20	USDOE-RL	U.S. Department of Energy, Richland Operations Office
21	USDOE-ORP	U.S. Department of Energy, Office of River Protection
22	DQO	Data Quality Objective
23	DSC	Differential Scanning Colorimetry
24	EC	Emergency Coordinator
25	Ecology	Washington State Department of Ecology
26	EPA	U.S. Environmental Protection Agency
27	ERA	Expedited Response Action
28	ETF	200 Area Effluent Treatment Facility
29	HFFACO	Hanford Federal Facility Agreement and Consent Order
30	GW	Ground Water
31	HPADS	Hanford Patrol Academy Demolition Site
32	HSWA	Hazardous and Solid Waste Amendments of 1984
33	HWMA	Hazardous Waste Management Act
34	ID	Identification
35	IRM	Interim Remedial Measure
36	LDR	Land Disposal Restrictions
37	LERF	Liquid Effluent Retention Facility
38	LSFF	105-DR Large Sodium Fire Facility
39	MSA	Mission Support Alliance, LLC
40	MTCA	Model Toxics Control Act

1	OSWER	Office of Solid Waste and Emergency Response
2	PNNL	Pacific Northwest National Laboratory
3	QA	Quality Assurance
4	QAPP	Quality Assurance Project Plan
5	QC	Quality Control
6	RCRA	Resource Conservation and Recovery Act of 1976
7	RCW	Revised Code of Washington
8	ROD	Record of Decision
9	RPD	Relative Percent Difference
10	RPP	RCRA Past Practice
11	SAP	Sampling and Analysis Plan
12	SARA	Superfund Amendments and Reauthorization Act of 1986
13	SCD	Security Control Devices
14	SHLWS	Simulated High Level Waste Slurry
15	SOP	Standard Operating Procedure
16	SWMU	Solid Waste Management Unit
17	TCLP	Toxicity Characteristic Leaching Procedure
18	TSD	Treatment, Storage, and/or Disposal
19	USDOE	United States Department of Energy
20	U.S.C.	United States Code
21	WAC	Washington Administrative Code
22	WAP	Waste Analysis Plan
23	WCH	Washington Closure Hanford, LLC
24	WRPS	Washington River Protection Solutions, LLC
25	WTP	Waste Treatment and Immobilization Plant
26	183-H	183-H Solar Evaporation Basins
27	242-A	242-A Evaporator
28	300 APT	300 Area Process Trenches
29	300 ASE	300 Area Solar Evaporator
30	303-K	303-K Storage Facility
31	305-B	305-B Storage Facility
32	325 HWTUs	325 Hazardous Waste Treatment Units
33	616-NRDWSF	616 Nonradioactive Dangerous Waste Storage Facility
34		

PART I STANDARD CONDITIONS

I.A EFFECT OF PERMIT

The Permittees are authorized to treat, store, and dispose of dangerous waste in accordance with the Conditions of this Permit and in accordance with the applicable provisions of [Chapter 173-303 WAC](#) (including provisions of the Chapter as they have been applied in the [HFFACO](#)). Any treatment, storage, or disposal of dangerous waste by the Permittees at the Facility that is not authorized by this Permit, or by [WAC 173-303-400](#) (including provisions of this regulation as they have been applied in the [HFFACO](#)), for those TSD units not subject to this Permit, and for which a Permit is required by [Chapter 173-303 WAC](#), is prohibited.

TSD units operating or closing under interim status will maintain interim status until that TSD unit is incorporated into Part III, V, and/or VI of this Permit, or until interim status is terminated under [WAC 173-303-805\(8\)](#). Interim status units will be incorporated into this Permit through the Permit modification process.

The Conditions of this Permit will be applied to the Facility as defined by the Permit Applicability Matrix (Permit Attachment 9).

I.A.1 USDOE is responsible for activities which include, but are not limited to, the overall management and operation of the Facility.

BNI is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

CHPRC is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

MSA is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

PNNL is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

WCH is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

WRPS is identified as a Permittee for activities subject to the Conditions of this Permit where its agents, employees, or subcontractors have operational and/or management responsibilities and control.

I.A.2 Coordination with the [HFFACO](#)

Each TSD unit will have an application for a final status Permit or closure/post-closure plan submitted to Ecology in accordance with the schedules identified in the [HFFACO](#) Milestone M-20-00 or in accordance with [WAC 173-303-830](#). After completion of the Permit application or closure/post-closure plan review, a final Permit decision will be made pursuant to [WAC 173-303-840](#). Specific Conditions for each TSD unit will be incorporated into this Permit in accordance with the Class 3 Permit modification procedure identified in Permit Condition I.C.3.

I.B PERSONAL AND PROPERTY RIGHTS

This Permit does not convey property rights of any sort, or any exclusive privilege; nor does it authorize any injury to persons or property, or any invasion of other private rights, or any violation of federal, state, or local laws or regulations.

I.C PERMIT ACTIONS

I.C.1 Modification, Revocation, Reissuance, or Termination

This Permit may be modified, revoked and reissued, or terminated by Ecology for cause per [WAC 173-303-810\(7\)](#) as specified in [WAC 173-303-830\(3\), \(4\), and \(5\)](#).

I.C.2 Filing of a Request

The filing of a request for a Permit modification, or revocation and reissuance, or termination, or a notification of planned changes, or anticipated noncompliance on the part of the Permittees, will not stay any Permit condition [[WAC 173-303-810\(7\)](#)] except as provided in [WAC 173-303-810\(2\)](#) under an emergency permit.

I.C.3 Modifications

I.C.3.a Except as provided otherwise by specific language in this Permit, the Permit modification procedures of [WAC 173-303-830\(2\), \(3\), and \(4\)](#) will apply to modifications or changes in design or operation of the Facility, or any modification or change in dangerous waste management practices covered by this Permit.

I.C.3.b As an exception, the Permittees will provide notifications to Ecology required by [WAC 173-303-830\(4\)\(a\)\(i\)\(A\)](#) on a quarterly basis. Each quarterly notification will be submitted within ten (10) days of the end of the quarter, and provide the required information for all such modification s put into effect during that reporting period.

I.C.3.c Quarterly reporting periods will be based upon the state Fiscal Year. For notifications required by the Permittees to persons on the facility mailing list described in [WAC 173-303-830\(4\)\(a\)\(i\)\(B\)](#), [-830\(4\)\(b\)\(ii\)](#), [-830\(4\)\(c\)\(ii\)](#), and [-830\(4\)\(e\)\(ii\)\(C\)](#), use of appropriate [HFFACO Community Relations Plan](#) publications and/or list servers for public involvement satisfy the notification requirements.

I.D SEVERABILITY

I.D.1 Effect of Invalidation

The provisions of this Permit are severable, and if any provision of this Permit, or the application of any provision of this Permit to any circumstance is contested and/or held invalid, the application of such provision to other circumstances and the remainder of this Permit will not be affected thereby. Invalidation of any state statutory or regulatory provision which forms the basis for any Condition of this Permit does not affect the validity of any other state statutory or regulatory basis for said Condition.

I.D.2 Final Resolution

In the event that a Condition of this Permit is stayed for any reason, the Permittees will continue to comply with the related applicable and relevant interim status standards in [WAC 173-303-400](#) until final resolution of the stayed Condition, unless Ecology determines compliance with the related applicable and relevant interim status standards would be technologically incompatible with compliance with other Conditions of this Permit, which have not been stayed, or unless the [HFFACO](#) authorizes an alternative action, in which case the Permittees will comply with the [HFFACO](#).

I.E DUTIES AND REQUIREMENTS

I.E.1 Duty to Comply

The Permittees will comply with all Conditions of this Permit, except to the extent and for the duration such noncompliance is authorized by an emergency Permit issued under [WAC 173-303-804](#). Any Permit noncompliance other than noncompliance authorized by an emergency Permit constitutes a violation of [Chapter 70.105 RCW](#), as amended, and is grounds for enforcement action, Permit termination, modification or revocation and reissuance of the Permit, and/or denial of a Permit renewal application.

I.E.2 Compliance Not Constituting Defense

Compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under Section 3007, 3008, 3013, or 7003 of RCRA (42 U.S.C. Sections 6927, 6928, 6934, and 6973), Section 104, 106(a) or 107 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) [42 U.S.C. Sections 9604, 9606(a), and 9607], as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.), or any other federal, state, or local law governing protection of public health, or the environment; provided, however, that compliance with this Permit during its term constitutes compliance at those areas subject to this Permit for the purpose of enforcement with [WAC 173-303-140](#), [WAC 173-303-180](#), [WAC 173-303-280 through -395](#), [WAC 173-303-600 through -680](#), [WAC 173-303-810](#), and [WAC 173-303-830](#), except for Permit modification s and those requirements not included in the Permit that become effective by statute, or that are promulgated under [40 CFR Part 268](#) restricting the placement of dangerous waste in or on the land.

I.E.3 Duty to Reapply

If the Permittees wish to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittees must apply for, and obtain a new Permit, in accordance with [WAC 173-303-806\(6\)](#).

I.E.4 Permit Expiration and Continuation

This Permit, and all Conditions herein, will remain in effect beyond the Permit's expiration date until the effective date of the new Permit, if the Permittees have submitted a timely, complete application for renewal per [WAC 173-303-806](#) and, through no fault of the Permittees, Ecology has not made a final Permit determination as set forth in [WAC 173-303-840](#).

I.E.5 Need to Halt or Reduce Activity Not a Defense

It will not be a defense in the case of an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the Conditions of this Permit.

I.E.6 Duty to Mitigate

In the event of noncompliance with the Permit, the Permittees will take all reasonable steps to minimize releases to the environment, and will carry out such measures as are reasonable to minimize or correct adverse impacts on human health and the environment.

I.E.7 Proper Operation and Maintenance

The Permittees will at all times properly operate and maintain all facilities and systems of treatment and control, which are installed or used by the Permittees, to achieve compliance with the Conditions of this Permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of backup or auxiliary facilities, or similar systems only when necessary to achieve compliance with the Conditions of the Permit.

I.E.8 Duty to Provide Information

The Permittees will furnish to Ecology, within a reasonable time, any relevant information which Ecology may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Permit, or to determine compliance with this Permit. The Permittees will also furnish to Ecology, upon request, copies of records required to be kept by this Permit.

I.E.9 Inspection and Entry

The Permittees will allow Ecology, or authorized representatives, upon the presentation of Ecology credentials, to:

I.E.9.a During operating hours, and at all other reasonable times, enter and inspect the Facility or any unit or area within the Facility, where regulated activities are located or conducted, or where records must be kept under the Conditions of this Permit;

I.E.9.b Have access to, and copy, at reasonable times, any records that must be kept under the Conditions of this Permit;

I.E.9.c Inspect at reasonable times any portion of the Facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Permit; and,

I.E.9.d Sample or monitor, at reasonable times, for the purposes of assuring Permit compliance, or as otherwise authorized by state law, as amended, for substances or parameters at any location.

I.E.10 Monitoring and Records

I.E.10.a Samples and measurements taken by the Permittees for the purpose of monitoring required by this Permit will be representative of the monitored activity. Sampling methods will be in accordance with [WAC 173-303-110](#) or [40 CFR 261](#), unless otherwise specified in this Permit, or agreed to in writing by Ecology. Analytical methods will be as specified in the most recently published test procedure of the documents cited in [WAC 173-303-110\(3\)\(a\) through \(h\)](#), unless otherwise specified in this Permit, or agreed to in writing by Ecology.

I.E.10.b The Permittees will retain at the TSD unit(s), or other locations approved by Ecology, as specified in Parts III, V, and/or VI of this Permit, records of monitoring information required for compliance with this Permit, including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of reports and records required by this Permit, and records of data used to complete the application for this Permit for a period of at least ten (10) years from the date of the sample, measurement, report, or application, unless otherwise required for certain information by other Conditions of this Permit. This information may be retained on electronic media.

- 1 I.E.10.c The Permittees will retain at the Facility, or other approved location, records of all
2 monitoring and maintenance records, copies of all reports and records required by this
3 Permit, and records of all data used to complete the application for this Permit, which are
4 not associated with a particular TSD unit, for a period of at least ten (10) years from the
5 date of certification of completion of post-closure care, or corrective action for the
6 Facility, whichever is later. This information may be retained on electronic media.
- 7 I.E.10.d The record retention period may be extended by request of Ecology at any time by
8 notification, in writing, to the Permittees, and is automatically extended during the course
9 of any unresolved enforcement action regarding this Facility to ten (10) years beyond the
10 conclusion of the enforcement action.
- 11 I.E.10.e Records of monitoring information shall include:
- 12 I.E.10.e.i The date, exact place and time of sampling or measurements;
- 13 I.E.10.e.ii The individual who performed the sampling or measurements and their affiliation;
- 14 I.E.10.e.iii The dates the analyses were performed;
- 15 I.E.10.e.iv The individual(s) who performed the analyses and their affiliation;
- 16 I.E.10.e.v The analytical techniques or methods used; and,
- 17 I.E.10.e.vi The results of such analyses
- 18 I.E.11 Reporting Planned Changes
- 19 The Permittees will give notice to Ecology, as soon as possible, of any planned physical
20 alterations, or additions to the Facility subject to this Permit. Such notice does not
21 authorize any noncompliance with, or modification of, this Permit.
- 22 I.E.12 Certification of Construction or Modification
- 23 I.E.12.a The Permittees may not commence treatment, storage, or disposal of dangerous wastes in
24 a new or modified portion of TSD units subject to this Permit until:
- 25 I.E.12.b The Permittees have submitted to Ecology, by certified mail, overnight express mail, or
26 hand delivery, a letter signed by the Permittees, and a registered professional engineer,
27 stating that the TSD unit has been constructed or modified in compliance with the
28 Conditions of this Permit; and,
- 29 I.E.12.c Ecology has inspected the modified or newly constructed TSD unit, and finds that it is in
30 compliance with the Conditions of this Permit; or
- 31 I.E.12.d Within fifteen (15) days of the date of receipt of the Permittees' letter, the Permittees
32 have not received notice from Ecology of its intent to inspect, prior inspection is waived,
33 and the Permittees may commence treatment, storage, and disposal of dangerous waste.
- 34 I.E.13 Anticipated Noncompliance
- 35 The Permittees will give at least thirty (30) days advance notice to Ecology of any
36 planned changes in the Facility subject to this Permit, or planned activity which might
37 result in noncompliance with Permit requirements.
- 38 If thirty (30) days advance notice is not possible, then the Permittees will give notice
39 immediately after the Permittees become aware of the anticipated noncompliance. Such
40 notice does not authorize any noncompliance with, or modification of, this Permit.

- 1 I.E.14 Transfer of Permits
- 2 I.E.14.a This Permit may be transferred to a new owner/operator only if it is modified, or revoked
3 and reissued, pursuant to [WAC 173-303-830\(3\)\(b\)](#). Unit-specific portion may be
4 transferred to a new Co-operator as a Class ¹1 modification with prior approval of the
5 Department's director.
- 6 I.E.14.b Before transferring ownership or operation of the Facility during its operating life, the
7 owner/operator will notify the new owner/operator in writing, of the requirements of
8 [WAC 173-303-290\(2\)](#), [-600](#) and [-806](#), and this Permit.
- 9 I.E.15 Immediate Reporting
- 10 I.E.15.a The Permittees will verbally report to Ecology any release of dangerous waste or
11 hazardous substances, or any noncompliance with the Permit which may endanger human
12 health or the environment. Any such information will be reported immediately after the
13 Permittees become aware of the circumstances.
- 14 I.E.15.b The immediate verbal report will contain all the information needed to determine the
15 nature and extent of any threat to human health and the environment, including the
16 following:
- 17 I.E.15.b.i Name, address, and telephone number of the Permittee responsible for the release or
18 noncompliant activity;
- 19 I.E.15.b.ii Name, location, and telephone number of the unit at which the release occurred;
- 20 I.E.15.b.iii Date, time, and type of incident;
- 21 I.E.15.b.iv Name and quantity of material(s) involved;
- 22 I.E.15.b.v The extent of injuries, if any;
- 23 I.E.15.b.vi An assessment of actual or potential hazard to the environment and human health, where
24 this is applicable;
- 25 I.E.15.b.vii Estimated quantity of released material that resulted from the incident; and,
- 26 I.E.15.b.viii Actions which have been undertaken to mitigate the occurrence.
- 27 I.E.15.c The Permittees will report, in accordance with Permit Conditions I.E.15.a and I.E.15.b,
28 any information concerning the release, or unpermitted discharge, of any dangerous
29 waste or hazardous substances that may cause an endangerment to drinking water
30 supplies, or ground or surface waters, or of a release, or discharge of dangerous waste, or
31 hazardous substances, or of a fire or explosion at the Facility, which may threaten human
32 health or the environment. The description of the occurrence and its cause will include
33 all information necessary to fully evaluate the situation and to develop an appropriate
34 course of action.
- 35 I.E.15.d For any release or noncompliance not required to be reported to Ecology immediately, a
36 brief account must be entered within two (2) working days, into the TSD Operating
37 Record, for a TSD unit, or into the Facility Operating Record, inspection log, or separate
38 spill log, for non-TSD units. This account must include: the time and date of the release,
39 the location and cause of the release, the type and quantity of material released, and a
40 brief description of any response actions taken or planned.
- 41 I.E.15.e All releases, regardless of location of release, or quantity of release, will be controlled
42 and mitigated, if necessary, as required by [WAC 173-303-145\(3\)](#).

I.E.16 Written Reporting

Within fifteen (15) days after the time the Permittees become aware of the circumstances of any noncompliance with this Permit, which may endanger human health or the environment, the Permittees will provide to Ecology a written report. The written report will contain a description of the noncompliance and its cause (including the information provided in the verbal notification); the period of noncompliance including exact dates and times; the anticipated time noncompliance is expected to continue, if the noncompliance has not been corrected; corrective measures being undertaken to mitigate the situation, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

I.E.17 Manifest Discrepancy Report

I.E.17.a For dangerous waste received from outside the Facility, whenever a significant discrepancy in a manifest is discovered, the Permittees will attempt to reconcile the discrepancy. If not reconciled within fifteen (15) days of discovery, the Permittees will submit a letter report in accordance with [WAC 173-303-370\(4\)](#), including a copy of the applicable manifest or shipping paper, to Ecology.

I.E.17.b For dangerous waste which is being transported within the Facility (i.e., shipment of on-site generated dangerous waste), whenever a significant discrepancy in the shipping papers (see Permit Condition II.Q.1) is discovered, the Permittees will attempt to reconcile the discrepancy. If not reconciled within fifteen (15) days of discovery, the Permittees will note the discrepancy in the receiving unit's Operating Record.

I.E.18 Unmanifested Waste Report

The Permittees will follow the provisions of [WAC 173-303-370](#) for the receipt of any dangerous waste shipment from off-site. The Permittees will also submit a report in accordance with [WAC 173-303-390\(1\)](#) to Ecology within fifteen (15) days of receipt of any unmanifested dangerous waste shipment received from off-site sources.

I.E.19 Other Noncompliance

The Permittees will report to Ecology all instances of noncompliance, not otherwise required to be reported elsewhere in this Permit, at the time the Annual Dangerous Waste Report is submitted.

I.E.20 Other Information

Whenever the Permittees become aware that they have failed to submit any relevant facts in a Permit application, closure plan, or post-closure plan, or submitted incorrect information in a Permit application, closure plan, or post-closure plan, or in any report to Ecology, the Permittees will promptly submit such facts or corrected information.

I.E.21 Reports, Notifications, and Submissions

All written reports, notifications or other submissions, which are required by this Permit to be sent, or given to the Director or Ecology, should be sent certified mail, overnight express mail, or hand delivered, to the current address and telephone number shown below. This address and telephone number may be subject to change.

Washington State Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, Washington 99354
Telephone: (509) 372-7950

Telephonic and oral reports/notifications also need to be provided to Ecology's Richland Office.

Ecology will give the Permittees written notice of a change in address or telephone number. It is the responsibility of the Permittees to ensure any required reports, notifications, or other submissions are transmitted to the addressee listed in this Condition. However, the Permittees will not be responsible for ensuring verbal and written correspondence reaches a new address or telephone number until after their receipt of Ecology's written notification.

I.E.22 Annual Report

The Permittees will comply with the annual reporting requirements of [WAC 173-303-390\(2\)\(a\) through \(e\), and \(g\)](#).

I.F SIGNATORY REQUIREMENT

All applications, reports, or information submitted to Ecology, which require certification, will be signed and certified in accordance with [WAC 173-303-810\(12\) and \(13\)](#). All other reports required by this Permit and other information requested by Ecology will be signed in accordance with [WAC 173-303-810\(12\)](#).

I.G CONFIDENTIAL INFORMATION

The Permittees may declare as confidential any information required to be submitted by this Permit, at the time of submission, in accordance with [WAC 173-303-810\(15\)](#).

I.H DOCUMENTS TO BE MAINTAINED AT FACILITY SITE

The Permittees will maintain at the Facility, or some other location approved by Ecology, the following documents and amendments, revisions, and modifications to these documents: (1) This Permit and all Attachments; and (2) The Hanford Facility Operating Record.

All dangerous waste Part B permit applications, post closure permit applications, and closure plan applications are maintained in the Administrative Record located at 2440 Stevens, Room 1101, Richland, WA.

Other approved locations: (1) 700 Area, (2) Locations within the City of Richland under control of one or more of the Permittees, (3) Administrative Record locations within the Stevens Center complex, (4) Consolidated Information Center at Washington State University, Tri-Cities. (5) Archived records at the National Archives and Records Administration (NARA), Pacific Alaska Region, 6125 Sand Point Way NE, Seattle, Washington, 98115-7999.

These documents will be maintained for ten (10) years after post-closure care or corrective action for the Facility, whichever is later, has been completed and certified as complete.

PART II GENERAL FACILITY CONDITIONS

II.A FACILITY CONTINGENCY PLAN

II.A.1 The Permittees will immediately carry out applicable provisions of the *Hanford Emergency Management Plan* as provided in Permit Attachment 4, pursuant to [WAC 173-303-360\(2\)](#), whenever there is an incident meeting the criteria of Permit Attachment 4, Section 4.2. Enforceable portions of Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) are identified in Permit Attachment 4, Appendix A.

II.A.2 The Permittees will comply with the requirements of [WAC 173-303-350\(4\)](#), as provided in the *Hanford Emergency Management Plan* (Permit Attachment 4). The *Hanford Emergency Management Plan* provides reference to the need for unit-specific contingency documentation. Unit-specific contingency documentation for Part III TSD units is included in Part III of this Permit. Unit-specific contingency documentation for Part V and VI TSD units required by this Permit condition is maintained in the Hanford Facility Operating Record, Unit-Specific files.

II.A.3 The Permittees will review and amend, if necessary, the applicable portions of the *Hanford Emergency Management Plan*, as provided in Permit Attachment 4, pursuant to [WAC 173-303-350\(5\)](#), and in accordance with the provisions of [WAC 173-303-830\(4\)](#). The Permittees will be able to demonstrate how Amendments to the applicable portions are controlled. The plan will be amended within a period of time agreed upon by Ecology.

II.A.4 The Permittees will comply with the requirements of [WAC 173-303-350\(3\)](#) and [-360\(1\)](#) concerning the emergency coordinator, except the names and home telephone numbers will be on file with the single point-of-contact, phone number (509) 373-3800 or 375-2400 (for PNNL units) as described in the *Hanford Emergency Management Plan*.

II.B PREPAREDNESS AND PREVENTION

II.B.1 The Permittees will equip the Facility with the equipment specified in [WAC 173-303-340\(1\)](#) as specified in the *Hanford Emergency Management Plan* (Permit Attachment 4). Unit-specific preparedness and prevention provisions are included in Parts III, V, and/or VI of this Permit.

II.B.2 The Permittees will test and maintain the equipment specified in Permit Condition II.B.1 as necessary to assure proper operation in the event of emergency.

II.B.3 The Permittees will maintain access to communications or alarms pursuant to [WAC 173-303-340\(2\)](#), as provided in the *Hanford Emergency Management Plan* (Permit Attachment 4) and unit-specific contingency plans.

II.B.4 The Permittees will comply with [WAC 173-303-340\(4\)](#) and [WAC 173-303-355\(1\)](#) pertaining to arrangements with local authorities.

II.B.5 Based on the arrangements with local authorities required by [WAC 173-303-340\(4\)](#) documented in Permit Attachment 4, Table 3-1, the Permittees will maintain the Memorandums of Understanding to comply with [WAC 173-303-350\(4\)\(b\)](#). The Hanford Facility Memorandums of Understanding with local authorities provides emergency planning and coordination equivalent to submittal of the contingency plan to local authorities

II.C PERSONNEL TRAINING

II.C.1 The Permittees will conduct personnel training as required by [WAC 173-303-330](#). The Permittees will maintain documents in accordance with [WAC 173-303-330\(2\) and \(3\)](#). Training records may be maintained in the Hanford Facility Operating Record, or on electronic data storage.

II.C.2 All Hanford Facility personnel will receive general Facility training within six (6) months of hire. This training will provide personnel with orientation of dangerous waste management activities being conducted at the Hanford Facility. This training will include:

II.C.2.a Description of emergency signals and appropriate personnel response;

II.C.2.b Identification of contacts for information regarding dangerous waste management activities;

II.C.2.c Introduction to waste minimization concepts;

II.C.2.d Identification of contact(s) for emergencies involving dangerous waste; and

II.C.2.e Familiarization with the applicable portions of the *Hanford Emergency Management Plan*.

II.C.3 Description of training plans for personnel assigned to TSD units subject to this Permit are delineated in the unit-specific Chapters in Parts III, V, and/or VI of this Permit.

II.C.4 The Permittees will provide the necessary training to non-Facility personnel (i.e., visitors, sub-contractors), as appropriate, for the locations of such personnel, and the activities that will be undertaken. At a minimum, this training will describe dangerous waste management hazards at the Facility.

II.D WASTE ANALYSIS

II.D.1 All waste analyses required by this Permit will be conducted in accordance with a written waste analysis plan (WAP), or sampling and analysis plan (SAP). Operating TSD units will have a WAP, which will be approved through incorporation of the TSD unit into Part III of this Permit. Closing TSD units, and units in post-closure, should have a SAP and, if necessary, a WAP, which will be approved through incorporation of the TSD unit into Part V and/or VI of this Permit.

II.D.2 Until a WAP is implemented in accordance with Permit Condition II.D.1., any unit(s) identified in Parts III, V, and/or VI of this Permit, without a unit-specific WAP approved by Ecology, will not treat, store, or dispose of dangerous waste, unless specified otherwise by Ecology in writing.

II.D.3 Each TSD unit WAP will include:

II.D.3.a The parameters for which each dangerous waste will be analyzed, and the rationale for selecting these parameters; (i.e., how analysis for these parameters will provide sufficient information on the waste properties to comply with [WAC 173-303-300\(1\), \(2\), \(3\), and \(4\)](#);

II.D.3.b The methods of obtaining or testing for these parameters;

II.D.3.c The methods for obtaining representative samples of wastes for analysis (representative sampling methods are discussed in [WAC 173-303-110\(2\)](#);

- 1 II.D.3.d The frequency with which analysis of a waste will be reviewed, or repeated, to ensure
2 that the analysis is accurate and current;
- 3 II.D.3.e The waste analyses which generators have agreed to supply;
- 4 II.D.3.f Where applicable, the methods for meeting the additional waste analysis requirements for
5 specific waste management methods, as specified in [WAC 173-303-140\(4\)\(b\)](#),
6 [173-303-395\(1\)](#), [173-303-630 through 173-303-670](#), and [40 CFR 264.1034](#), [264.1063](#),
7 [284\(a\)](#), and [268.7](#), for final status facilities;
- 8 II.D.3.f.i For off-site facilities, the procedures for confirming that each dangerous waste received
9 matches the identity of the waste specified on the accompanying manifest, or shipping
10 paper. This includes at least:
- 11 II.D.3.f.i.a The procedure for identifying each waste movement at the Facility; and,
- 12 II.D.3.f.i.b The method for obtaining a representative sample of the waste to be identified, if the
13 identification method includes sampling.
- 14 II.D.3.f.ii For surface impoundments exempted from Land Disposal Restrictions (LDR) under
15 [40 CFR 268.4\(a\)](#), incorporated by reference in [WAC 173-303-140\(2\)](#), the procedures and
16 schedules for:
- 17 II.D.3.f.iii The sampling of impoundment contents;
- 18 II.D.3.f.iv The analysis of test data; and
- 19 II.D.3.f.v The annual removal of residues that are not delisted under [40 CFR 260.22](#), or which
20 exhibit a characteristic of hazardous waste and either;
- 21 II.D.3.f.v.a Do not meet applicable treatment standards of [40 CFR Part 268, Subpart D](#); or
- 22 II.D.3.f.v.b Where no treatment standards have been established:
- 23 II.D.3.f.v.b.1 Such residues are prohibited from land disposal under [40 CFR 268.32](#), or [RCRA](#)
24 [Section 3004\(d\)](#); or
- 25 II.D.3.f.v.b.2 Such residues are prohibited from land disposal under [40 CFR 268.33\(f\)](#); and
- 26 II.D.4 Should waste analysis be required by this Permit at a location on the Facility, other than
27 at a TSD unit, a SAP will be maintained by the Permittees, and made available upon
28 request from Ecology. Any SAP required by this Permit, not associated with a particular
29 TSD unit, will include the elements of Permit Conditions II.D.3.a.
- 30 **II.E QUALITY ASSURANCE/QUALITY CONTROL**
- 31 II.E.1 All WAPs and SAPs required by this Permit will include a quality assurance/quality
32 control (QA/QC) plan, or equivalent, to document all monitoring procedures to ensure
33 that all information, data, and resulting decisions are technically sound, statistically valid,
34 and properly documented in accordance with [HFFACO Action Plan §6.5](#), Quality
35 Assurance, and reported/made available in accordance with [HFFACO Action Plan §9.6](#),
36 Data Access and Delivery Requirements.
- 37 II.E.2 The level of QA/QC for the collection, preservation, transportation, and analysis of each
38 sample required for implementation of this Permit may be based upon an Ecology-
39 approved DQO for the sample. These DQOs will be approved by Ecology in writing or
40 through incorporation of unit plans and Permits into Parts III, V, and/or VI of this Permit.

II.F GROUND WATER AND VADOSE ZONE MONITORING

The Permittees will comply with the ground water monitoring requirements of [WAC 173-303-645](#). This Condition will apply only to those wells the Permittees use for the ground water monitoring programs applicable to the TSD units incorporated into Parts III, V, and/or VI of this Permit. Where releases from TSD units subject to this Permit have been documented or confirmed by investigation, or where vadose zone monitoring is proposed for integration with ground water monitoring, the Permittees will evaluate the applicability of vadose zone monitoring. The Permittees will consult with Ecology regarding the implementation of these requirements. If agreed to by Ecology, integration of ground water and vadose zone monitoring, for reasons other than this Permit, may be accommodated by this Permit. Results from other investigation activities will be used whenever possible to supplement and/or replace sampling required by this Permit.

II.F.1 Purgewater Management

Purgewater will be handled in accordance with the requirements set forth in Permit Attachment 10, *Purgewater Management Plan*.

II.F.2 Well Remediation and Abandonment

II.F.2.a The Permittees will inspect the integrity of active resource protection wells as defined by [WAC 173-160-030](#), subject to this Permit, at least once every five (5) years. These inspections will be recorded in the Operating Record. The Permittees will prepare and maintain a plan and schedule by January 26, 1995, specifying the schedule and technical standards for this program. The Permittees will provide a copy of this plan upon the request of Ecology.

II.F.2.b The Permittees will evaluate resource protection wells subject to this Permit according to Sections 4.0 and 5.0 of the *Hanford Well Maintenance Inspection Plan* (Permit Attachment 8) and the *Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA*, June 1990 (Permit Attachment 7), to determine if a well has a potential use as a qualified well. The Permittees will abandon or remediate unusable wells according to the requirements of [Chapter 18.104 RCW](#), [Chapter 173-160 WAC](#), and [Chapter 173-162 WAC](#) to ensure that the integrity of wells subject to this Permit is maintained. The time for this remediation will be specified in Parts III, V, and/or VI of this Permit.

II.F.2.c Ecology will receive notice in writing at least seventy-two (72) hours before the Permittees remediate (excluding maintenance activities), or abandon any well subject to this Permit.

II.F.2.d For wells subject to this Permit, the Permittees will achieve full compliance with [Chapter 173-160 WAC](#) and [Chapter 18.104 RCW](#) consistent with a rolling five (5) year schedule agreed to by Ecology and the Permittees. This process will be completed by the year 2012.

II.F.3 Well Construction

All wells constructed pursuant to this Permit will be constructed in compliance with [Chapter 173-160 WAC](#).

II.G SITING CRITERIA

The Permittees will comply with the applicable notice of intent and siting criteria of [WAC 173-303-281](#) and [WAC 173-303-282](#), respectively.

II.H RECORDKEEPING AND REPORTING

The provisions of [WAC 173-303-620](#) are not applicable to the Hanford Facility because the USDOE is both owner and operator of the Hanford Facility.
[WAC 173-303-620\(1\)\(c\)](#).

II.I FACILITY OPERATING RECORD

II.I.1 The Permittees will maintain a written Facility Operating Record until ten (10) years after post-closure, or corrective action is complete and certified for the Facility, whichever is later. Except as specifically provided otherwise in this Permit, the Permittees will also record all information referenced in this Permit in the Facility Operating Record within seven (7) working days after the information becomes available. A TSD unit-specific Operating Record will be maintained for each TSD unit at a location identified in Parts III, V, and VI of this Permit. This information may be maintained on electronic media. Each TSD unit-specific Operating Record will be included by reference in the Facility Operating Record. Information required in each TSD unit-specific Operating Record is identified on a unit-by-unit basis in Part III, V, or VI of this Permit. The Facility Operating Record will include, but not be limited to, the following information.

II.I.1.a A description of the system(s) currently utilized to identify and map solid waste management units and their locations. The description of the system(s) is required to include an identification of on-site access to the system's data, and an on-site contact name and telephone number. In addition to, or as part of, this system(s), the Permittees will also maintain a list identifying active ninety (90)-day waste storage areas, and dangerous waste satellite accumulation areas and their locations. The list will identify the location, the predominant waste types managed at the area, and a date identifying when the list was compiled. Maps will be provided by the Permittees upon request by Ecology;

II.I.1.b Records and results of waste analyses required by [WAC 173-303-300](#);

II.I.1.c An identification of the system(s) currently utilized to generate Occurrence Reports. The identification of the system(s) is required to include a description, an identification of an on-site location of hard-copy Occurrence Reports, an identification of on-site access to the system's data, and an on-site contact name and telephone number;

II.I.1.d Copies of all unmanifested waste reports;

II.I.1.e The *Hanford Emergency Management Plan*, as well as summary reports, and details of all incidents that require implementing the contingency plan, as specified in [WAC 173-303-360\(2\)\(k\)](#);

II.I.1.f An identification of the system(s) currently utilized and being developed to record personnel training records and to develop training plans. The identification of the system(s) is required to include a description, an identification of on-site access to the system's data, and an on-site contact name and telephone number;

II.I.1.g Preparedness and prevention arrangements made pursuant to [WAC 173-303-340\(4\)](#) and documentation of refusal by state or local authorities that have declined to enter into agreements in accordance with [WAC 173-303-340\(5\)](#);

II.I.1.h Reserved Condition;

II.I.1.i Reserved Condition;

II.I.1.j Documentation (e.g., waste profile sheets) of all dangerous waste transported to or from any TSD unit subject to this Permit. This documentation will be maintained in the receiving unit's Operating Record from the time the waste is received;

- 1 II.I.1.k An identification of the system(s) currently utilized to cross-reference waste locations to
2 specific manifest document numbers. The identification of the system(s) is required to
3 include a thorough description, an identification of an on-site location of a hard-copy data
4 report, an identification of on-site access to the system's data, and an on-site contact
5 name and telephone number;
- 6 II.I.1.l Reserved Condition;
- 7 II.I.1.m Annual Reports required by this Permit;
- 8 II.I.1.n An identification of all systems currently utilized to record monitoring information,
9 including all calibration and maintenance records, and all original strip chart recordings
10 for continuous monitoring instrumentation. The identification of systems will include a
11 description of the systems. The descriptions will include a confirmation that the criteria
12 of Permit Condition I.E.10 is provided by the utilization of the system. The identification
13 of the systems will also include an identification of on-site access to the system's data, an
14 on-site contact name and telephone number;
- 15 II.I.1.o Reserved Condition;
- 16 II.I.1.p Summaries of all records of ground water corrective action required by
17 [WAC 173-303-645](#);
- 18 II.I.1.q An identification of the system(s) currently being utilized and being developed to
19 evaluate compliance with the Conditions of this Permit and with [Chapter 173-303 WAC](#).
20 The identification of the system(s) will include a description of the system(s), an
21 identification of on-site access to the system's data, and an on-site contact name and
22 telephone number. The description of the system(s) will also include a definition of
23 which portion(s) of the system(s) is accessible to Ecology;
- 24 II.I.1.r All deed notifications required by this Permit (to be included by reference);
- 25 II.I.1.s All inspection reports required by this Permit; and
- 26 II.I.1.t All other reports as required by this Permit, including design change documentation and
27 nonconformance documentation.
- 28 **II.J FACILITY CLOSURE**
- 29 II.J.1 Final closure of the Hanford Facility will be achieved when closure activities for all TSD
30 units have been completed, as specified in Parts III, IV, V, or VI of this Permit.
31 Completion of these activities will be documented using either certifications of closure,
32 in accordance with [WAC 173-303-610\(6\)](#), or certifications of completion of post-closure
33 care, in accordance with [WAC 173-303-610\(11\)](#).
- 34 II.J.2 The Permittees will close all TSD units as specified in Parts III, V, and/or VI of this
35 Permit.
- 36 II.J.3 The Permittees will submit a written notification of, or request for, a Permit modification
37 in accordance with the provisions of [WAC 173-303-610\(3\)\(b\)](#), whenever there is a
38 change in operating plans, facility design, or the approved closure plan. The written
39 notification or request must include a copy of the amended closure plan for review, or
40 approval, by Ecology.

II.J.4 The Permittees will close the Facility in a manner that:

II.J.4.a Minimizes the need for further maintenance;

II.J.4.b Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products, to the ground, surface water, ground water, or the atmosphere; and

II.J.4.c Returns the land to the appearance and use of surrounding land areas to the degree possible, given the nature of the previous dangerous waste activity.

II.J.4.d Meets the requirements of [WAC 173-303-610\(2\)\(b\)](#).

II.K SOIL/GROUND WATER CLOSURE PERFORMANCE STANDARDS

II.K.1 For purposes of Permit Condition II.K, the term "clean closure" shall mean the status of a TSD unit at the Facility which has been closed to the cleanup levels prescribed by [WAC 173-303-610\(2\)\(b\)](#), provided certification of such closure has been accepted by Ecology.

II.K.2 The Permittees may close a TSD unit to background levels as defined in Ecology approved Hanford Site Background Documents, if background concentrations exceed the levels prescribed by Permit Condition II.K.1. Closure to these levels, provided the Permittees comply with all other closure requirements for a TSD unit as identified in Parts III, V, and/or VI of this Permit, shall be deemed as "clean closure".

II.K.3 Except for those TSD units identified in Permit Conditions II.K.1, II.K.2, or II.K.4, the Permittees may close a TSD unit to a cleanup level specified under Method C of [Chapter 173-340 WAC](#). Closure of a TSD unit to these levels, provided the Permittees comply with all other closure requirements for the TSD unit as specified in Parts III, V, and/or VI of the Permit, and provided the Permittees comply with Permit Conditions II.K.3.a through II.K.3.c, shall be deemed as a "modified closure".

II.K.3.a For "modified closures", the Permittees shall provide institutional controls in accordance with [WAC 173-340-440](#) which restricts access to the TSD unit for a minimum of five (5) years following completion of closure. The specific details and duration of institutional controls shall be specified in Parts III, V, and/or VI of this Permit for a particular TSD unit.

II.K.3.b For "modified closures", the Permittees shall provide periodic assessments of the TSD unit to determine the effectiveness of the closure. The specific details of the periodic assessments shall be specified in Parts III, V, and/or VI of this Permit. The periodic assessments shall include, as a minimum, a compliance monitoring plan in accordance with [WAC 173-340-410](#) that will address the assessment requirements on a unit-by-unit basis. At least one (1) assessment activity shall take place after a period of five (5) years from the completion of closure, which will demonstrate whether the soils and ground water have been maintained at or below the allowed concentrations as specified in Parts III, V, or VI of this Permit. Should the required assessment activities identify contamination above the allowable limits as specified in Parts III, V, and/or VI, the TSD unit must be further remediated, or the requirements of II.K.4 must be followed. Should the required assessment activities demonstrate that contamination has diminished, or remained the same, the Permittees may request that Ecology reduce, or eliminate the assessment activities and/or institutional controls.

II.K.3.c For "modified closures", the Permittees shall specify the particular activities required by this Condition in a Post-Closure Permit application.

- 1 II.K.4 Any TSD unit for which Permit Conditions II.K.1, II.K.2, or II.K.3, are not chosen as the
2 closure option, closing the TSD unit as a landfill may be selected. Closure and post-
3 closure of the TSD unit as a landfill, must follow the procedures and requirements
4 specified in [WAC 173-303-610](#).
- 5 II.K.5 The cleanup option selected shall be specified in Parts III, V, and/or VI of this Permit,
6 and shall be chosen with consideration of the potential future site use for that TSD
7 unit/area. Definitions contained within [Chapter 173-340 WAC](#) shall apply to Permit
8 Condition II.K. Where definitions are not otherwise provided by this Permit, the
9 [HFFACO](#), or [Chapter 173-303 WAC](#).
- 10 II.K.6 Deviations from a TSD unit closure plan required by unforeseen circumstances
11 encountered during closure activities, which do not impact the overall closure strategy,
12 but provide equivalent results, shall be documented in the TSD unit-specific Operating
13 Record and made available to Ecology upon request, or during the course of an
14 inspection.
- 15 II.K.7 Where agreed to by Ecology, integration of other statutorily or regulatory mandated
16 cleanups may be accommodated by this Permit. Results from other cleanup investigation
17 activities shall be used whenever possible to supplement and/or replace TSD unit closure
18 investigation activities. All, or appropriate parts of, multipurpose cleanup and closure
19 documents can be incorporated into this Permit through the Permit modification process.
20 Cleanup and closures conducted under any statutory authority, with oversight by either
21 Ecology or the EPA, which meet the equivalent of the technical requirements of Permit
22 Conditions II.K.1 through II.K.4, may be considered as satisfying the requirements of this
23 Permit.

24 II.L DESIGN AND OPERATION OF THE FACILITY

25 II.L.1 Proper Design and Construction

26 The Permittees will design, construct, maintain, and operate the Facility to minimize the
27 possibility of a fire, explosion, or any unplanned sudden or non-sudden release of
28 hazardous substances to air, soil, ground water, or surface water, which could threaten
29 human health, or the environment.

30 II.L.2 Design Changes, Nonconformance, and As-Built Drawings

31 II.L.2.a After completing the Permit modification process in Permit Condition I.C.3, the
32 Permittees will conduct all construction subject to this Permit in accordance with the
33 approved designs, plans and specifications that are required by this Permit, unless
34 authorized otherwise in Permit Conditions II.L.2.b or II.L.2.c. For purposes of Permit
35 Conditions II.L.2.b and II.L.2.c, an Ecology construction inspector, or TSD unit manager,
36 are designated representatives of Ecology.

37 II.L.2.b During construction of a project subject to this Permit, changes to the approved designs,
38 plans and specifications will be formally documented. All design change documentation
39 will be maintained in the TSD unit-specific Operating Record and will be made available
40 to Ecology upon request or during the course of an inspection. The Permittees will
41 provide copies of design change documentation affecting any critical system to Ecology
42 within five (5) working days of initiating the design change documentation.
43 Identification of critical systems will be included by the Permittees in each TSD unit-
44 specific dangerous waste Permit application, closure plan or Permit modification, as
45 appropriate. Ecology will review a design change documentation modifying a critical
46 system, and inform the Permittees in writing within two (2) working days, whether the
47 proposed design change documentation, when issued, will require a Class 1, 2, or 3

Permit modification. If after two (2) working days Ecology has not responded, it will be deemed as acceptance of the design change documentation by Ecology.

II.L.2.c During construction of a project subject to this Permit, any work completed which does not meet or exceed the standards of the approved design, plans and specifications will be formally documented with nonconformance documentation. All nonconformance documentation will be maintained in the TSD unit-specific Operating Record and will be made available to Ecology upon request, or during the course of an inspection. The Permittees will provide copies of nonconformance documentation affecting any critical system to Ecology within five (5) working days after identification of the nonconformance. Ecology will review nonconformance documentation affecting a critical system and inform the Permittees in writing, within two (2) working days, whether a Permit modification is required for any nonconformance, and whether prior approval is required from Ecology before work proceeds, which affects the nonconforming item. If Ecology does not respond within two (2) working days, it will be deemed as acceptance and no Permit modification will be required.

II.L.2.d Upon completion of a construction project subject to this Permit, the Permittees will produce as-built drawings of the project which incorporate the design and construction modifications resulting from all project design change documentation and nonconformance documentation, as well as modifications made pursuant to [WAC 173-303-830](#). The Permittees will place the drawings into the Operating Record within twelve (12) months of completing construction, or within an alternate period of time specified in a unit-specific Permit Condition in Part III or V of this Permit.

II.L.2.e Facility Compliance

The Permittees in receiving, storing, transferring, handling, treating, processing, and disposing of dangerous waste, will design, operate, and/or maintain the Facility in compliance with all applicable federal, state, and local laws and regulations.

II.M SECURITY

The Permittees will comply with the security provisions of [WAC 173-303-310](#). The Permittees may comply with the requirements of [WAC 173-303-310\(2\)](#) on a unit-by-unit basis.

II.N RECEIPT OF DANGEROUS WASTES GENERATED OFF-SITE

II.N.1 Receipt of Off-Site Waste

The Permittees will comply with Permit Conditions II.N.2 and II.N.3 for any dangerous wastes which are received from sources outside the United States, or from off-site generators.

II.N.2 Waste from Sources Outside the United States

The Permittees will meet the requirements of [WAC 173-303-290\(1\)](#) for waste received from outside the United States.

II.N.3 Notice to Generator

For waste received from off-site sources (except where the owner/operator is also the generator), the Permittees will inform the generator in writing that they have the appropriate Permits for, and will accept, the waste the generator is shipping, as required by [WAC 173-303-290\(3\)](#). The Permittees will keep a copy of this written notice as part of the TSD unit-specific Operating Record.

II.O GENERAL INSPECTION REQUIREMENTS

II.O.1 The Permittees will inspect the Facility to prevent malfunctions and deterioration, operator errors, and discharges, which may cause or lead to the release of dangerous waste constituents to the environment, or threaten human health. Inspections must be conducted in accordance with the provisions of [WAC 173-303-320\(2\)](#). In addition to the TSD unit inspections specified in Parts III, V, and/or VI, the following inspections will also be conducted:

II.O.1.a The 100, 200 East, 200 West, 300, and 400 areas will be inspected annually.

II.O.1.b The Permittees will inspect the banks of the Columbia River, contained within the Facility boundary, once a year. The inspection will be performed from the river, by boat, and the inspectors will follow the criteria in Permit Condition II.O.1.c.

II.O.1.c The Permittees will visually inspect the areas identified in Permit Conditions II.O.1.a and II.O.1.b for malfunctions, deterioration, operator errors, and discharges which may cause or lead to the release of dangerous waste constituents to the environment, or that threaten human health. Specific items to be noted are as follows:

II.O.1.c.i Remains of waste containers, labels, or other waste management equipment;

II.O.1.c.ii Solid waste disposal sites not previously identified for remedial action;

II.O.1.c.iii Uncontrolled waste containers (e.g., orphan drums);

II.O.1.c.iv Temporary or permanent activities that could generate an uncontrolled waste form; and

II.O.1.c.v Unpermitted waste discharges.

II.O.1.d The Permittees will notify Ecology at least seven (7) days prior to conducting these inspections in order to allow representatives of Ecology to be present during the inspections.

II.O.2 If the inspection by the Permittees, conducted pursuant to Permit Condition II.O.1, reveals any problems, the Permittees will take remedial action on a schedule agreed to by Ecology.

II.O.3 The inspection of high radiation areas will be addressed on a case-by-case basis in either Part III of this Permit, or prior to the inspections required in Permit Condition II.O.1.

II.P MANIFEST SYSTEM

II.P.1 The Permittees will comply with the manifest requirements of [WAC 173-303-370](#) for waste received from off-site and [WAC 173-303-180](#) for waste shipped off-site.

II.P.2 Transportation of dangerous wastes along roadways, if such routes are not closed to general public access at the time of transport, can be manifested pursuant to an alternate tracking system as allowed by [WAC 173-303-180\(6\)](#). The alternate tracking system can be a paper system or an electronic system. The roadways addressed by this condition are a public or private right-of-way within or along the border of contiguous property where the movement is under control of the USDOE. The alternate tracking system will consist of documentation between the offering Hanford Facility location and the receiving Hanford Facility location containing the following information:

II.P.2.a Hanford Facility offeror name, location, and telephone number;

II.P.2.b Hanford Facility receiver name, location, and telephone number;

II.P.2.c Description of waste;

II.P.2.d Number and type of containers;

- 1 II.P.2.e Total quantity of waste;
2 II.P.2.f Unit volume/weight;
3 II.P.2.g Dangerous waste number(s) or U.S. Department of Transportation hazard class; and
4 II.P.2.h Special handling instructions including emergency contacts.
5 II.P.3 The Hanford Facility offeror and receiver will resolve any discrepancies of information
6 found related to Permit Conditions II.P.2.a through II.P.2.h.
7 II.P.4 If the discrepancies cannot be resolved at the Hanford Facility receiving location, a new
8 Hanford Facility receiver location will be agreed upon, or the dangerous waste will be
9 returned to the offeror location. The documentation accompanying the movement of
10 dangerous waste will be updated to reflect the new receiving location.

11 **II.Q ON-SITE TRANSPORTATION**

- 12 II.Q.1 Documentation must accompany any on-site dangerous waste which is transported to or
13 from any TSD unit subject to this Permit, through or within the 600 Area, unless the
14 roadway is closed to general public access at the time of shipment. Waste transported by
15 rail or by pipeline is exempt from this Condition. This documentation will include the
16 following information, unless other unit-specified provisions are designated in Part III or
17 V of this Permit:
18 II.Q.1.a Generator's name, location, and telephone number;
19 II.Q.1.b Receiving TSD unit's name, location, and telephone number;
20 II.Q.1.c Description of waste;
21 II.Q.1.d Number and type of containers;
22 II.Q.1.e Total quantity of waste;
23 II.Q.1.f Unit volume/weight;
24 II.Q.1.g Dangerous waste number(s); and
25 II.Q.1.h Any special handling instructions.
26 II.Q.2 All non-containerized solid, dangerous waste transported to or from TSD units, subject to
27 this Permit, will be covered to minimize the potential for material to escape during
28 transport.

29 **II.R EQUIVALENT MATERIALS**

- 30 II.R.1 The Permittees may substitute an equivalent or superior product for any equipment or
31 materials specified in this Permit. Use of equivalent or superior products will not be
32 considered a modification of this Permit. A substitution will not be considered equivalent
33 unless it is at least as effective as the original equipment or materials in protecting human
34 health and the environment.
35 II.R.2 The Permittees will place in the Operating Record (within seven [7] days after the change
36 is put into effect) the substitution documentation, accompanied by a narrative
37 explanation, and the date the substitution became effective. Ecology may judge the
38 soundness of the substitution.
39 II.R.3 If Ecology determines that a substitution was not equivalent to the original, it will notify
40 the Permittees that the Permittees' claim of equivalency has been denied, of the reasons
41 for the denial, and that the original material or equipment must be used. If the product
42 substitution is denied, the Permittees will comply with the original approved product
43 specification, or find an acceptable substitution.

II.S LAND DISPOSAL RESTRICTIONS (LDR)

Unless specifically identified otherwise in the [HFFACO](#), the Permittees will comply with all LDR requirements as set forth in [WAC 173-303-140](#).

II.T ACCESS AND INFORMATION

To the extent that work required by this Permit must be done on property not owned or controlled by the Permittees, the Permittees must utilize their best efforts to obtain access and information at these locations.

II.U MAPPING OF UNDERGROUND PIPING

II.U.1 Reserved.

II.U.2 Reserved.

II.U.3 The Permittees will maintain piping maps for existing, newly identified, and/or new dangerous waste underground pipelines (including active, inactive, and abandoned pipelines, which contain or contained dangerous waste subject to the provisions of [Chapter 173-303 WAC](#)) at the Hanford Facility. The maps will identify the origin, destination, direction of flow, size, depth and type (i.e., reinforced concrete, stainless steel, cast iron, etc.), of each pipe, and the location of their diversion boxes, valve pits, seal pots, catch tanks, receiver tanks, and pumps, and utilize Washington State Plane Coordinates, NAD 83(91), meters. If the type of pipe material is not documented on existing drawings, the most probable material type will be provided. The maps will also identify whether the pipe is active, inactive, or abandoned. The age of all pipes requiring identification pursuant to this Condition will be documented in an Attachment to the submittal. If the age cannot be documented, an estimate of the age of the pipe will be provided based upon best engineering judgment. These maps need not include the pipes within a fenced tank farm or within a building/structure. These maps will be compiled using documented QA/QC control methods and procedures outlined in [DOE/RL-96-50](#), *Hanford Facility RCRA Permit Mapping and Marking of Dangerous Waste Underground Pipelines Report*, September 1996. These maps and any Attachments will be maintained in the Facility Operating Record and be updated annually as required by Permit Condition II.U.4.

II.U.4 Permittees will maintain current all maps required by Permit Condition II.U.3. These maps will be updated to incorporate new or revised information available by March 30th of each year. By September 30th of each year, the Permittees will submit to Ecology a list of maps that have been updated. The updated maps (including any Attachments) and the annual list submitted to Ecology will be maintained in the Facility Operating Record.

II.V MARKING OF UNDERGROUND PIPING

The Permittees will maintain marking of underground pipelines located outside the 200 East, 200 West, 300, 400, 100N, and 100K Areas. These pipelines will be marked at the point they pass beneath an area fence, at their origin and destination, at any point they cross an improved road, and every 100 meters along the pipeline corridor where practicable. The markers will be labeled with a sign that reads "Buried Dangerous Waste Pipe" and will be visible from a distance of fifteen (15) meters.

II.W OTHER PERMITS AND/OR APPROVALS

II.W.1 The Permittees will be responsible for obtaining all other applicable federal, state, and local permits authorizing the development and operation of the Facility. To the extent that work required by this Permit must be done under a permit and/or approval pursuant to other regulatory authority, the Permittees will use their best efforts to obtain such permits.

II.W.2 All other permits related to dangerous waste management activities are severable and enforceable through the permitting authority under which they are issued.

II.W.3 All air emissions from units subject to this Permit will comply with all applicable state and federal regulations pertaining to air emission controls, including but not limited to, [Chapter 173-400 WAC](#), General Regulations for Air Pollution Sources; [Chapter 173-460 WAC](#), Controls for New Sources of Toxic Air Pollutants; and [Chapter 173-480 WAC](#), Ambient Air Quality Standards and Emission Limits for Radionuclides.

II.X SCHEDULE EXTENSIONS

II.X.1 The Permittees will notify Ecology in writing, as soon as possible, of any deviations or expected deviations, from the schedules of this Permit. The Permittees will include with the notification all information supporting their claim that they have used best efforts to meet the required schedules. If Ecology determines that the Permittees have made best efforts to meet the schedules of this Permit, Ecology will notify the Permittees in writing by certified mail, that the Permittees have been granted an extension. Such an extension will not require a Permit modification under Permit Condition I.C.3. Should Ecology determine that the Permittees have not made best efforts to meet the schedules of this Permit, Ecology may take such action as deemed necessary.

Copies of all correspondence regarding schedule extensions will be kept in the Operating Record.

II.X.2 Any schedule extension granted through the approved change control process identified in the [HFFACO](#) will be incorporated into this Permit. Such a revision will not require a Permit modification under Permit Condition I.C.3.

II.Y CORRECTIVE ACTION

In accordance with [WAC 173-303-646](#) and [WAC 173-303-815\(2\)\(b\)\(ii\)](#), the Permittee must conduct corrective action, as necessary to protect human health and the environment, for releases of dangerous waste and dangerous constituents from solid waste management units and areas of concern at the facility, including releases that have migrated beyond the facility boundary. The Permittee may be required to implement measures within the facility to address releases, which have migrated beyond the facility's boundary. As specified in Permit Conditions II.Y.1.g, II.Y.2.a.iii, and II.Y.2.a.ii, the Permittee's right to challenge Ecology's authority to impose corrective action with respect to radionuclides, CERCLA Past Practice (CPP) Units (as identified under Permit Condition II.Y.2.a.) and selected solid waste management units not covered by the [HFFACO](#) at property currently subleased to US Ecology, Inc. (as identified under Permit Condition II.Y.3.a.i), is reserved until such time as Ecology chooses to impose corrective action in accordance with the Permit modification procedures of [WAC 173-303-830](#).

II.Y.1 Compliance with [Chapter 173-340 WAC](#)

In accordance with [WAC 173-303-646](#), the Permittee must conduct corrective action "as necessary to protect human health and the environment". To ensure that corrective action will be conducted as necessary to protect human health and the environment, except as provided in Permit Condition II.Y.2, the Permittee must conduct corrective action in a manner that complies with the following provisions of [Chapter 173-340 WAC](#):

II.Y.1.a As necessary to select a cleanup action in accordance with [WAC 173-340-360](#) and [WAC 173-340-350](#) State Remedial Investigation and Feasibility Study;

II.Y.1.b [WAC 173-340-360](#) Selection of Cleanup Actions;

II.Y.1.c [WAC 173-340-400](#) Cleanup Actions;

II.Y.1.d [WAC 173-340-410](#) Compliance Monitoring Requirements;

II.Y.1.e [WAC 173-340-420](#) Periodic Site Reviews;

II.Y.1.f [WAC 173-340-440](#) Institutional Controls; and

II.Y.1.g [WAC 173-340-700 through -760](#) Cleanup Standards, except that to the extent that Ecology seeks to impose corrective action with respect to radionuclides regulated under the provisions of the Atomic Energy Act, as amended, 42 U.S.C. § 2011 et.seq. (AEA), the Permittee may challenge Ecology's authority to impose such corrective action through a timely appeal of the permit modification issued by Ecology without argument from Ecology that such right has been waived by a failure to fully litigate that issue through an appeal taken within thirty (30) days of the issuance of this permit, and without argument from the Permittee that such requirement fails to satisfy a cause for Permit modification under [WAC 173-303-830\(3\)\(a\)](#).

II.Y.2 Acceptance of Work under Other Authorities or Programs and Integration with the [HFFACO](#).

Corrective action is necessary to protect human health and the environment for all units identified in [Appendix B](#) and [Appendix C](#) of the [HFFACO](#). Notwithstanding Permit Condition II.Y.1, work under other cleanup authorities or programs, including work under the [HFFACO](#), may be used to satisfy corrective action requirements, provided it protects human health and the environment.

II.Y.2.a For units identified in [Appendix C](#) of the [HFFACO](#), as amended, as CERCLA Past Practice (CPP) Units, Ecology accepts work under the [HFFACO](#), as amended, and under the CERCLA program, as satisfying corrective action requirements to the extent provided for in, and subject to the reservations and requirements of, Permit Conditions II.Y.2.a.i through II.Y.2.a.iv.

II.Y.2.a.i For any unit identified in [Appendix C](#) of the [HFFACO](#) as a CPP unit, the Permittee must comply with the requirements and schedules related to investigation and cleanup of the CPP unit(s) developed and approved under the [HFFACO](#), as amended. The requirements and schedules related to investigation and cleanup of CPP units currently in place under the [HFFACO](#), as amended, and in the future developed and approved under the FFAOC, as amended, are incorporated into this Permit by this reference and apply under this Permit as if they were fully set forth herein. If the Permittee is not in compliance with requirements of the [HFFACO](#), as amended, that relate to investigation or cleanup of CPP unit(s), Ecology may take action to independently enforce the requirements as corrective action requirements under this Permit.

- 1 II.Y.2.a.ii For any unit identified in [Appendix C](#) of the [HFFACO](#) as a CPP unit, in the case of an
2 interim ROD, a final decision about satisfaction of corrective action requirements will be
3 made in the context of issuance of a final ROD.
- 4 II.Y.2.a.iii If EPA and Ecology, after exhausting the dispute resolution process under [Section XXVI](#)
5 of the [HFFACO](#), cannot agree on requirements related to investigation or cleanup of CPP
6 unit(s), Ecology will notify the Permittee, in writing, of the disagreement and impose, in
7 accordance with the Permit Modification Procedures of [WAC 173-303-830](#), a
8 requirement for the Permittee to conduct corrective action for the subject unit(s) in
9 accordance with Permit Condition II.Y.1. The Permittee may challenge Ecology's
10 authority to impose such corrective action requirements through a timely appeal of such
11 permit modification, without argument from Ecology that the Permittee's right to raise
12 such challenge has been waived by a failure to fully litigate that issue through an appeal
13 taken within thirty (30) days of the issuance of this permit, and without argument from
14 the Permittee that such requirement fails to satisfy a cause for Permit modification under
15 [WAC 173-303-830\(3\)\(a\)](#). Within sixty (60) days of receipt of the above permit
16 modification, or within some other reasonable period of time agreed to by Ecology and
17 the Permittee, the Permittee must submit for Ecology review and approval, a plan to
18 conduct corrective action in accordance with Permit Condition II.Y.1 for the subject
19 unit(s). The Permittee's plan may include a request that Ecology evaluate work under
20 another authority or program. Approved corrective action plans under this Condition will
21 be incorporated into this Permit in accordance with the Permit Modification Procedures
22 of [WAC 173-303-830](#).
- 23 II.Y.2.a.iv The Permittee must maintain information on corrective action for CPP units covered by
24 the [HFFACO](#) in accordance with the [HFFACO Action Plan §9.0](#) and [§10.0](#). In addition,
25 the Permittee must maintain all reports and other information developed in whole, or in
26 part, to implement the requirements of Permit Condition II.Y.2.a, including reports of
27 investigations and all raw data, in the Facility Operating Record in accordance with
28 Permit Condition II.I. Information that is maintained in the Hanford Site Administrative
29 Record may be incorporated by reference into the Facility Operating Record.
- 30 II.Y.2.b For units identified in [Appendix C](#) of the [HFFACO](#), as amended, as RPP units, Ecology
31 accepts work under the [HFFACO](#), as amended, as satisfying corrective action
32 requirements to the extent provided for, and subject to the reservations and requirements
33 of, Permit Conditions II.Y.2.b.i through II.Y.2.b.iv.
- 34 II.Y.2.b.i For any unit identified in [Appendix C](#) of the [HFFACO](#), as amended, as RPP unit, until a
35 Permit modification is complete under Permit Condition II.Y.2.b.iii., the Permittee must
36 comply with the requirements and schedules related to investigation and cleanup of RPP
37 units developed and approved under the [HFFACO](#), as amended. The requirements and
38 schedules related to investigation and cleanup of RPP units currently in place under the
39 [HFFACO](#), as amended, and in the future developed and approved under the [HFFACO](#),
40 as amended, are incorporated into this Permit by this reference and apply under this
41 Permit as if they were fully set forth herein. Until a permit modification is complete
42 under Permit Condition II.Y.2.b.iii, if the Permittee is not in compliance with
43 requirements and schedules related to investigation and cleanup of RPP units developed
44 and approved under the [HFFACO](#), as amended, Ecology may take action to
45 independently enforce the requirements as corrective action requirements under this
46 Permit.
- 47 II.Y.2.b.ii When the Permittee submits a corrective measures study for an individual RPP unit or a
48 group of RPP units, the Permittee must, at the same time, recommend a remedy for the
49 unit(s). The remedy recommendation must contain all the elements of a draft cleanup
50 action plan under [WAC 173-340-360\(10\)](#).

- 1 II.Y.2.b.iii After considering the Permittees' corrective measures study and remedy
2 recommendation, Ecology will make a tentative remedy selection decision and publish
3 the decision for public review and comment. Public review and comment may be
4 accomplished by publishing the tentative decision as a draft Permit under
5 [WAC 173-303-840\(10\)](#), or by a method that provides an equivalent opportunity for
6 public review and participation. Following public review and comment, Ecology will
7 make a final remedy selection decision. Final remedy decisions will be incorporated into
8 the Permit using the Permit Modification Procedures of [WAC 173-303-830](#).
- 9 II.Y.2.b.iv The Permittee must maintain information on corrective action for RPP units covered by
10 the [HFFACO](#), as amended, in accordance with [HFFACO Action Plan §9.0](#) and [§10.0](#). In
11 addition, the Permittee must maintain all reports and other information developed in
12 whole, or in part, to implement the requirements of Permit Condition II.Y.2.b, including
13 reports of investigations and all raw data, in the Facility Operating Record in accordance
14 with Permit Condition II.I. Information that is maintained in the Hanford Site
15 Administrative Record may be incorporated into the Facility Operating Record by
16 reference.
- 17 II.Y.2.c For each TSD unit or group of units, when the Permittee submits a certification of closure
18 or a certification of completion of post-closure care, or at an earlier time agreed to by
19 Ecology and the Permittee, the Permittee must, at the same time, either:
- 20 II.Y.2.c.i Document that the activities completed under closure and/or post-closure satisfy the
21 requirements for corrective action; or
- 22 II.Y.2.c.ii If the activities completed under closure and/or post-closure care do not satisfy corrective
23 action requirements, identify the remaining corrective action requirements and the
24 schedule under which they will be satisfied, if remaining corrective action requirements
25 will be satisfied by work developed and carried out under the [HFFACO](#) provisions for
26 RPP units or CPP units, a reference to the appropriate RPP or CPP process and schedule
27 will suffice.
- 28 II.Y.2.c.iii Ecology will make final decisions as to whether the work completed under closure and/or
29 post-closure care satisfies corrective action, specify any unit-specific corrective action
30 requirements, and incorporate the decision into this Permit in accordance with the Permit
31 Modification Procedures of [WAC 173-303-830](#).
- 32 II.Y.2.d Notwithstanding any other condition in this Permit, Ecology may directly exercise any
33 administrative or judicial remedy under the following circumstances:
- 34 II.Y.2.d.i Any discharge or release of dangerous waste, or dangerous constituents, which are not
35 addressed by the [HFFACO](#), as amended;
- 36 II.Y.2.d.ii Discovery of new information regarding dangerous constituents or dangerous waste
37 management, including but not limited to, information about releases of dangerous waste
38 or dangerous constituents which are not addressed under the [HFFACO](#), as amended; or
- 39 II.Y.2.d.iii A determination that action beyond the terms of the [HFFACO](#), as amended, is necessary
40 to abate an imminent and substantial endangerment to the public health, or welfare, or to
41 the environment.
- 42 II.Y.3 Releases of Dangerous Waste or Dangerous Constituents Not Covered By the [HFFACO](#)
- 43 II.Y.3.a US Ecology
- 44 II.Y.3.a.i The following solid waste management units are not covered by the [HFFACO](#):
- 45 II.Y.3.a.i.a US Ecology, Inc., SWMU 1: Chemical Trench;

- 1 II.Y.3.a.i.b US Ecology, Inc., SWMU 2-13: Low-level radioactive waste trenches 1 through 11A;
2 and
- 3 II.Y.3.a.i.c US Ecology, Inc., SWMU 17: Underground resin tank.
- 4 II.Y.3.a.ii Selected solid waste management units identified in Permit Condition II.Y.3.a.i are
5 currently being investigated by US Ecology in accordance with the Comprehensive
6 Investigation US Ecology – Hanford Operations Workplan. Following completion of this
7 investigation and any closure required of such solid waste management unit under the
8 authority of the Washington State Department of Health, or within one (1) year of the
9 effective date of this Permit Condition, whichever is earlier, Ecology will make a
10 tentative decision as to whether additional investigation or cleanup is necessary to protect
11 human health or the environment for the solid waste management units identified in
12 Permit Condition II.Y.3.a.i, and publish that decision as a draft permit in accordance with
13 [WAC 173-303-840\(10\)](#). Following the associated public comment period, and
14 consideration of any public comments received during the public comment period,
15 Ecology will publish as final permit conditions under [WAC 173-303-840\(8\)](#) either:
- 16 II.Y.3.a.ii.a A decision that corrective action is not necessary to protect human health or the
17 environment;
- 18 II.Y.3.a.ii.b An extension to the schedule established under Permit Condition II.Y.3.a.ii; or
- 19 II.Y.3.a.ii.c A decision that corrective action in accordance with Permit Condition II.Y.1 is necessary
20 to protect human health or the environment.
- 21 II.Y.3.a.iii If Ecology decides under Permit Condition II.Y.3.a.ii that corrective action is necessary
22 to protect human health or the environment, the Permittee may challenge Ecology’s
23 authority to impose such corrective action requirements through a timely appeal of such
24 permit modification, without argument from Ecology that the right to raise such
25 challenge has been waived by a failure to fully litigate that issue through an appeal taken
26 within thirty (30) days of the issuance of this permit, and with argument from the
27 Permittee that such requirement fails to satisfy a cause for permit modification under
28 [WAC 173-303-830\(3\)\(a\)](#). Within one hundred and eighty (180) days of receipt of the
29 above Permit modification, the Permittee must submit, for Ecology review and approval,
30 a plan to conduct corrective action in accordance with Permit Condition II.Y.1.
31 Approved corrective action plans under this condition will be incorporated into this
32 Permit in accordance with the Permit Modification Procedures of [WAC 173-303-830](#).
- 33 II.Y.3.b Newly Identified Solid Waste Management Units and Newly Identified Releases of
34 Dangerous Waste or Dangerous Constituents.
- 35 The Permittee must notify Ecology of all newly-identified solid waste management units
36 and all newly-identified areas of concern at the Facility. For purposes of this condition, a
37 ‘newly-identified’ solid waste management unit or a ‘newly-identified’ area of concern is
38 a unit or area not identified in the [HFFACO](#), as amended, on the effective date of this
39 condition and not identified by Permit Condition II.Y.3.a. Notification to Ecology must
40 be in writing and must include, for each newly-identified unit or area, the information
41 required by [WAC 173-303-806\(4\)\(a\)\(xxiii\)](#) and [WAC 173-303-806\(4\)\(a\)\(xxiv\)](#).
42 Notification to Ecology must occur at least once every calendar year, in January, and
43 must include all units and areas newly identified since the last notification, except that if
44 a newly identified unit or area may present an imminent and substantial endangerment to
45 human health or the environment, notification must occur within five (5) days of
46 identification of the unit or area. If information required by
47 [WAC 173-303-806\(4\)\(a\)\(xxiii\)](#) or [WAC 173-303-806\(4\)\(a\)\(xxiv\)](#) is already included in

the Waste Information Data System, it may be incorporated by reference into the required notification.

II.Z WASTE MINIMIZATION

In accordance with [WAC 173-303-380\(1\)\(q\)](#), and Section 3005(h) of RCRA, 42 U.S.C. 6925(h), the Permittee must place a certification in the Hanford Facility Operating Record, Unit-Specific Files on an annual basis that:

II.Z.1.a A program is in place to reduce the volume and toxicity of hazardous waste generated to the degree determined by the Permittee to be economically practicable; and,

II.Z.1.b The proposed method of treatment, storage or disposal is that practicable method currently available to the Permittee, which minimizes the present and future threat to human health and the environment.

II.Z.2 The Permittee will maintain each such certification of waste minimization in the operating record as required by Permit Condition II.I.1.

II.AA AIR EMISSION STANDARDS FOR PROCESS VENTS

The Permittees will comply with applicable requirements of [WAC 173-303-690](#) for process vents associated with Part III units performing specific separations processes unless exempted by [WAC 173-303-690\(1\)\(d\)](#). Threshold limits applied to process vents potentially requiring emission controls subject to [WAC 173-303-690](#) are evaluated based on the summation of applicable emission sources for the entire Hanford Facility. When the summed emissions fall below threshold limits in [40 CFR 264.1032\(a\)\(1\)](#), no emission control devices are required. If threshold limits in [40 CFR 264.1032\(a\)\(1\)](#) are predicted to be exceeded, the Permittees will notify Ecology to determine the appropriate course of action. Unit-specific information is contained in Part III of the Permit for applicable units.

II.BB AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS

The Permittees will comply with applicable requirements of [WAC 173-303-691](#) for certain equipment leaks associated with Part III units unless exempted by [WAC 173-303-691\(1\)\(e\) or \(f\)](#). Air emission standards apply to equipment that contacts or contains hazardous wastes with organic concentrations of at least 10 percent by weight. Unit-specific information is contained in Part III of the Permit for applicable units.

II.CC AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS

The Permittees shall comply with applicable requirements of [WAC 173-303-692](#) for containers, tanks, and surface impoundment areas associated with Part III units unless exempted by [WAC 173-303-692\(1\)\(b\)](#). Unit-specific information is contained in Part III of the Permit for applicable units.

PART III UNIT-SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS

Operating Unit 2, PUREX Storage Tunnels
Operating Unit 3, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility
Operating Unit 4, 242-A Evaporator
Operating Unit 5, 325 Hazardous Waste Treatment Units
Operating Unit 10, Waste Treatment and Immobilization Plant
Operating Unit 11, Integrated Disposal Facility
Operating Unit 15, 331-C Storage Unit
Operating Unit 16, 400 Area Waste Management Unit

PART IV UNIT SPECIFIC CONDITIONS FOR CORRECTIVE ACTION

Corrective Action Unit 1, 100-NR-1

PART V UNIT-SPECIFIC CONDITIONS FOR UNITS UNDERGOING CLOSURE

Closure Unit 1, 1325-N Liquid Waste Disposal Facility
Closure Unit 2, 1301-N Liquid Waste Disposal Facility
Closure Unit 3, 1324-N Surface Impoundment and 1324-NA Percolation Pond

PART VI UNIT-SPECIFIC CONDITIONS FOR UNITS IN POST-CLOSURE

Post Closure Unit 1, 300 Area Process Trenches
Post Closure Unit 2, 183-H Solar Evaporation Basins

UNITS RETIRED FROM THE PERMIT

100 D Ponds (Closed 8/9/99)
105-DR Large Sodium Fire Facility (Closed 7/1/04)
100-NR-2 Operable Unit (9/30/09)
200 West Area Ash Pit Demolition Site (Closed 11/28/95)
2101-M Pond (Closed 11/28/95)
216-B-3 Expansion Ponds (Closed 7/31/95)
218-E-8 Borrow Pit Demolition Site (Closed 11/28/95)
224-T Transuranic Waste Storage and Assay Facility (Closed 11/12/08)
241-Z Treatment and Storage Tanks (Closed 2/22/07)
2727-S Nonradioactive Dangerous Waste Storage Facility (Closed 7/31/95)
300 Area Solvent Evaporator (Closed 7/31/95)
300 Area Waste Acid Treatment System (Closed 10/30/2005)
303-K Storage Facility (Closed 7/22/02)
303-M Oxide Facility (Closed 6/15/06)
304 Concretion Facility (Closed 1/21/96)
305-B Storage Facility (Closed 7/2/07)
3718-F Alkali Metal Treatment and Storage Facility Closure Plan (Closed 8/4/98)
4843 Alkali Metal Storage Facility Closure Plan (Closed 4/14/97)
Hanford Patrol Academy Demolition Site (Closed 11/28/95)
Plutonium Finishing Plant Treatment Unit (Closed 2/8/05)
Simulated High Level Waste Slurry Treatment and Storage Unit (Closed 10/23/95)

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PERMIT ATTACHMENT 3: SECURITY

This Attachment addresses provisions contained in Hanford Facility Permit, WA7890008967 (Permit) Condition II.M.

The following sections describe the security measures, equipment, and warning signs used to control entry to the Hanford Facility at the facility level according to Permit Condition II.M. Additional security information for individual TSD units and unit groups is located in the unit specific Permit conditions in Chapters III, V, and VI of this Permit.

3.1 SECURITY PROCEDURES AND EQUIPMENT

This section describes the warning signs, 24-hour surveillance system, and barriers used to provide security and control access to the Hanford Facility, including active portions of the facility. The active portion of the facility means that portion of the facility where treatment, storage, or disposal of dangerous/mixed waste occurs.

3.1.1 Warning Signs

Operating TSD units and unit groups must comply with the requirements found in [WAC 173-303-310](#)(2)(a) regarding the placement of signs. Security information for operating TSD units and unit groups regarding the placement of signs is provided in the unit specific Permit conditions. Security information for non-operating TSD unit groups incorporated into the Permit Part III, Part V, or Part VI regarding the placement of signs is determined on a case-by-case basis. Typically, the Hanford Facility signs described below will be sufficient for non-operating unit.

Signs are posted at area boundaries within the Hanford Site stating *No Trespassing. Security Badges Required Beyond This Point. Authorized Vehicles Only. Public Access Prohibited* (or an equivalent legend). In addition, warning signs stating *Danger Unauthorized Personnel Keep Out* (or an equivalent legend) are posted at operating TSD units or unit groups or at active portions of operating TSD units or unit groups within the Hanford Facility. These signs are written in English, legible from a distance of 7.6 meters, and visible from all angles of approach.

3.1.2 Surveillance System

The entire Hanford facility is a controlled access area. The Hanford facility maintains 24-hour surveillance and access control systems for protection of government property, classified information, and special nuclear materials. The Hanford Patrol maintains a continuous presence of protective force personnel to provide additional security.

All personnel accessing locations on the Hanford Site (except for publicly accessible locations) must possess and display a U.S. DOE issued security identification badge indicating the appropriate authorization. All personnel entering or exiting the Hanford Site are subject to random security badge inspections by protective force personnel to validate access authorization. All vehicles and hand-carried items entering or exiting the Hanford Site are subject to random security inspections and searches by protective force personnel to validate access authorization and preclude the unauthorized introduction of prohibited/controlled articles, or the unauthorized removal of government or contractor assets. The surveillance systems in place satisfy the security requirements of [WAC 173-303-310](#)(2)(b), (a 24-hour surveillance system) at the Hanford Facility level.

3.1.3 Natural or Artificial Barriers

The majority of TSD units and unit groups are located within the controlled access area of the Hanford Site. Vehicular access to roads leading to the controlled area is through 24-hour controlled access points at the Wye, Yakima, and Rattlesnake barricades. The barricades are posted with restrictive signage to meet security requirements at the Hanford Facility level for the 100 Areas, 200 Areas, and 600 Area TSD units and unit groups. Perimeter fences, restrictive signage, and random protective force patrols are used to control access to the 300 Area and 400 Area. Additional means to bar entry or control access (e.g., fences, locked entry doors) are discussed, as necessary for 331-C Storage Unit, 325 Hazardous Waste Management Unit, and 400 Area Waste Management Unit in their unit specific Permit conditions.

The Hanford Facility level security systems are also in place to satisfy the security requirements of [WAC 173-303-310](#)(2)(c), (artificial or natural barriers).

Permit Attachment 5

Hanford Facility Personnel Training Program

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PERMIT ATTACHMENT 5: HANFORD FACILITY PERSONNEL TRAINING PROGRAM

This Attachment provides a description of the Hanford Facility Personnel Training program. This program description includes the elements necessary to demonstrate compliance with [WAC 173-303-330](#). The Training Program described in this Attachment is applicable to Hanford Facility personnel¹. The Hanford Facility Personnel Training program consists of general facility training and unit group-specific training, and includes classroom instruction or on the job training (OJT). Classroom instruction and OJT is identified in the unit specific training plans in Parts III, and V. Unit group-specific training is specific to particular dangerous waste management unit groups or operationally related dangerous waste management unit groups in the Permit.

5.1 INTRODUCTORY AND CONTINUING TRAINING

Introductory and continuing training are designed to prepare Hanford Facility personnel to manage and maintain the unit groups in Permit Parts III, and V in a safe, effective, and environmentally sound manner and to perform waste management duties related to their job descriptions located in the unit specific training plans. In addition to preparing personnel to manage and maintain these dangerous waste management unit groups under normal conditions, the training ensures that personnel are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is based upon [WAC 173-303-330](#)(1)(d) and is consistent with the description of actions contained in unit specific contingency plans. The introductory and continuing training will provide the following:

- Teach Hanford Facility personnel to perform their duties in a way that ensures the Hanford Facility's compliance with [WAC 173-303](#)
- Teach Hanford Facility personnel dangerous waste management procedures, including implementation of the Contingency Plan, relevant to the job titles/positions in which they are employed; and
- Ensure Hanford Facility personnel can respond effectively to emergencies

5.1.1 Introductory Training

Introductory Training consists of the following: General Hanford Facility Orientation, Contingency Plan Training, Emergency Coordinator Training, and Operations Training.

Introductory training includes general facility training and any unit specific training applicable to Hanford Facility personnel job descriptions and work assignments. Hanford Facility personnel cannot perform a waste management duty, for which they are not properly trained, except to gain required experience while under the direct supervision of a person knowledgeable in dangerous waste management procedures, and must include training relevant to the positions in which the facility personnel are employed. Upon successful completion of introductory training, Hanford Facility personnel may work unescorted/unsupervised.

Hanford Facility personnel must be trained within six months after their employment at or assignment to the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later. Retraining of introductory training may not be necessary when Hanford Facility personnel are reassigned. Prior to completion of required training, new Hanford Facility personnel must work under the direct supervision of trained personnel until the training is completed. [[WAC 173-303-330](#)(1)(c)].

¹ Based on [WAC 173-303-040](#) 'personnel' or 'facility personnel' means all persons who work at, or oversee the operations of, a dangerous waste facility, and whose actions or failure to act may result in noncompliance with the requirements of [WAC 173-303-280](#) through [173-303-395](#) and [173-303-600](#) through [173-303-695](#).

5.1.1.1 General Hanford Facility Orientation

General Hanford Facility Orientation provides an orientation to dangerous waste management activities being conducted on the Hanford Facility. General facility orientation provides:

- Description of emergency signals and appropriate response;
- Identification of contact(s) for emergencies involving dangerous waste and dangerous waste management activities
- Training records for General Hanford Facility Orientation are only maintained for Hanford Facility personnel as defined in this Attachment.

5.1.1.2 Contingency Plan Training

This training includes actions required to meet applicable training requirements of [WAC 173-303-330](#)(1)(d), to respond effectively to emergencies at each unit group in Parts III, V, and VI that may be applicable to the job title/position of a particular individual.

5.1.1.3 Emergency Coordinator Training

Hanford Facility personnel whose job title/position require performing emergency coordinator duties, defined in Permit Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Section 4.2 [e.g., Building Emergency Director] in the Hanford Incident Command System, receive training on implementation of the contingency plan and training assigned in applicable unit group-specific Permit conditions in Permit Parts III, V, and VI. In accordance with [WAC 173-303-360](#)(1), Emergency coordinators must also be thoroughly familiar with operations, activities, location and properties of all waste handled, location of all records, and the unit/building layout for each unit group to which they are assigned.

5.1.1.4 Operations Training

Dangerous waste management operations training (e.g., waste designation training, shippers training) is specified for particular job title/positions in the unit group specific requirements in the Permit Parts III, V, and VI. Operations training provides training to Hanford Facility personnel on the operation of dangerous waste management units (e.g., container management unit) and the type of activities performed at the waste management unit (e.g., sampling).

5.1.2 Continuing Training

Continuing training, required by [WAC 173-303-330](#)(1)(b), includes review of general facility training and unit specific training, as specified below:

- General Hanford Facility training: Annual refresher training is provided for General Hanford Facility Training (Section 5.1.1.1).
- Contingency Plan Training: Annual refresher training is provided for Contingency Plan Training (Section 5.1.1.2.).
- Emergency Coordinator Training: Annual refresher training is provided for Emergency Coordinator Training (Section 5.1.1.3).
- Operations Training: Refresher training occurs annually, every other year, or every three years for operations training. One-time only training does not contain refresher courses, and will be identified as a one-time only training course. The TSD unit group specific training plan will specify the frequency for each operations training course.

Continuing training is administered annually, and includes training with two-year or three-year retraining frequencies. A course is administered annually if it is administered not less than 30 days after the retraining date set for that course.

5.2 ELEMENTS OF UNIT SPECIFIC TRAINING

Unit group specific training requirements not addressed in Permit Condition II.C, and Attachment 5 for Hanford Facility personnel assigned to dangerous waste management units are included in Permit Parts III, and V. Each unit group specific Chapter will contain an Addendum consisting of a Training matrix, and applicable requirements of [WAC 173-303-330](#)(1)(d). Each training matrix contains the following:

- training categories (from Permit Attachment 5, Sections 5.1.1 and 5.1.2);
- job title/position (e.g., staff, dangerous waste worker categories, building emergency director); and
- breakdown of operations training (e.g., container management, tank system management)

Changes to the unit specific-group training matrix are subject to the modification in accordance with Permit Condition I.C.3.

5.3 TRAINING RECORDS

Personnel training records are maintained in hard copy form or by using electronic data storage as specified in Permit Condition II.I.2, and [WAC 173-303-330](#)(3). At a minimum, training records will consist of proof of course completion (e.g., electronic signature, supervisor initials, and database) for the training received, and training date(s). Training records are maintained in accordance with the requirements of [WAC 173-303-330](#)(2)(c) and (3).

5.4 TRAINING PROGRAM DIRECTION

Staff knowledgeable in dangerous waste management procedures directs the training program for Hanford Facility personnel. The responsibility for directing the program may be divided among subject matter experts, unit management, a training organization, or some combination of these. The specific identity of the staff responsible for direction of the program is available from the unit operations supervisor and from the Permittee's central compliance organization.

Direction of the training program is met by the following:

- Subject Matter Experts: Knowledgeable person regarding applicable dangerous waste management requirements to provide for compliance with [WAC 173-303](#).
- Unit Management: Identify roles, responsibilities, and training for Hanford Facility personnel assigned to the unit in accordance with the training plan.
- Training Organization: Collect and record documentation of training taken by Hanford Facility personnel, and maintain training records.

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1	Permit Attachment 6	Reports and Records
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2	PERMIT ATTACHMENT 6: REPORTS AND RECORDS.....	6.1
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PERMIT ATTACHMENT 6: REPORTS AND RECORDS

This Attachment identifies reports and record requirements as detailed in the Hanford Facility RCRA Permit (Permit), Condition II.I, Hanford Facility Operating Record (HFOR) and other Permit Conditions.

Permit Condition ¹	Records and/or Reports		HFOR		Type of submittal		
			General File	Unit Specific File	Verbal ²	Transmittal letter	Certified package
I.C.3	Quarterly Notification of Class 1 Modification	Unit		T		T	
		Facility	T				
	Class 2 modifications with or without temporary authorization	Unit		T		T	
		Facility	T				
	Class 3 modifications with or without temporary authorization	Unit		T		T	
		Facility	T				
I.E.10.b I.E.10.c II.I.1.n	Monitoring and records	Unit		T			
		Facility	T				
I.E.11	Reporting planned changes	Unit		T	T		
		Facility	T				
I.E.12.i	Certification of construction or modifications	Unit		T			T ³
I.E.13	Anticipated noncompliance	Unit		T	T	T	
		Facility	T				
I.E.14	Transfer of permits	Facility	T			T	
I.E.15.a I.E.15.c	Immediate reporting	Unit		T	T		
		Facility	T				
I.E.15.d	Release or noncompliance not requiring immediate reporting	Unit		T			
		Facility	T				
I.E.16	Written reporting	Unit		T		T	
		Facility	T				
I.E.17.a	Manifest discrepancy report	Unit		T		T	
		Facility	T				
I.E.17.b	Waste tracking form discrepancy report	Unit		T			
I.E.20	Other information	Unit		T	T	T	
		Facility	T				
I.H	Permit related documentation: Permit and all attachments and modifications	Facility	T				
	Permit related documentation: Part B permit application, closure plan, closure/post closure plan, post closure permit application documentation	Unit		T			
II.E.4	Notification of Permit related information	Unit		T		T	
		Facility	T				
II.I.1.a	Waste location	Unit		T			
		Facility	T				
II.I.1.b II.D	Waste analysis	Unit		T			
		Facility	T				
II.I.1.c	Occurrence reports	Unit		T			
		Facility	T				
II.I.1.d I.E.18	Unmanifested waste reports	Unit		T		T ⁴	
		Facility	T				

Permit Condition ¹	Records and/or Reports		HFOR		Type of submittal		
			General File	Unit Specific File	Verbal ²	Transmittal letter	Certified package
II.I.1.e II.A (all)	Hanford Emergency Management Plan and incident records	Unit		T	T	T	
		Facility	T				
II.I.1.f II.C	Personnel training records	Unit		T			
		Facility	T				
II.I.1.g II.B.4	Preparedness and prevention arrangements	Facility	T				
II.I.1.i II.H	Projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance	Unit		T		T	
		Facility	T				
II.I.1.j	Onsite transportation documentation	Unit		T			
II.I.1.k	Cross-reference of waste location to waste manifest numbers	Unit		T			
		Facility	T				
II.I.1.m	Annual reports	Facility	T				
I.E.19	Annual Noncompliance Report	Facility	T			T	
I.E.22	Annual Dangerous Waste Report	Facility	T				T ⁵
II.F.2	Groundwater monitoring records	Unit		T		T	
		Facility	T				
II.I.1.p	Groundwater corrective action	Unit		T			
		Facility	T				
II.I.1.q	Permit condition compliance evaluation system	Unit		T			
		Facility	T				
II.I.1.r	Deed notification (reference only)	Unit		T			T ⁶
II.I.1.s II.O	Inspection records	Unit		T		T	
		Facility	T				
II.J.1	Closure certification	Unit		T			T ⁶
II.J.3	Notification of, or request for, a permit modification	Unit		T		T	
		Facility	T				
II.K.6	Closure plan deviation	Unit		T			
II.I.1.t II.L.2.b II.L.2.c	Engineering change notices and nonconformance reports	Unit		T		T	
II.L.2.d	As-built drawings	Unit		T			
II.N.2 II.N.3	Receipt of wastes generated offsite	Unit		T		T	
II.R	Equivalent materials	Unit		T			
II.S	Land disposal restrictions records	Unit		T		T	
II.U	Mapping methodology report and underground pipeline maps	Facility	T			T	
II.X.1	Schedule extensions	Unit		T		T	
		Facility	T				
II.Y.2.a.iv II.Y.2.b.iv	Corrective Action	Unit		T			
II.Y.3.b	Solid Waste Management Unit notification	Unit		T	T	T	
40 CFR 264.73(B)(9)	Waste minimization/pollution prevention	Unit		T			

- 1 ¹ Permit Condition, unless otherwise noted.
- 2 ² Verbal reporting in accordance with time frames noted in the specified conditions.
- 3 ³ Certified by a registered professional engineer in accordance with WAC 173-303-810(14)(a)(i).
- 4 ⁴ Certification in accordance with Ecology Unmanifested Dangerous Waste Report form.
- 5 ⁵ Certified by Permittees in accordance with WAC 173-303-810(12).
- 6 ⁶ Certified in accordance with WAC 173-303-610.
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1	Permit Attachment 8	Hanford Well maintenance & Inspection Plan
2		
3		BHI-01265, Rev. 0
4		(May 1999)
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APPENDIX

A	ROUTINE WELL MAINTENANCE SCHEDULE	A-i
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1.0 INTRODUCTION

This document presents the well maintenance and inspection plan for use in supporting groundwater activities at the Hanford Site. Wells located across the Hanford Site are used by Site contractors for a variety of groundwater programs. As such, these wells require various types of maintenance during their lifecycles. The wells that must be maintained are defined in Section 2.0, "Requirements." The Well Maintenance Program is the responsibility of Bechtel Hanford, Inc. (BHI). The maintenance/inspection program is designated as routine maintenance.

2.0 REQUIREMENTS

The *Revised Code of Washington* ([RCW] 18.104), as amended, states that the property owner is required to maintain wells to guard against waste and contamination of the groundwater resources. Also, RCW 18.104 empowers the Washington State Department of Ecology (Ecology) to adopt rules for the maintenance of wells and their casings. These rules and regulations are contained in *Washington Administrative Code* (WAC) 173-160, "Minimum Standards for Construction and Maintenance of Wells," issued by Ecology.

The provisions of the dangerous waste section of the *Resource Conservation and Recovery Act of 1976 Permit for the Treatment, Storage, and Disposal of Dangerous Waste at the Hanford Site* Permit are controlled by the "State of Washington Hazardous Waste Management Act of 1976" (RCW 70.105). Part II.F.2.a of Ecology 1994 states that "...the Permittees shall inspect the integrity of active resource protection wells as defined by WAC 173-160-030 subject to this Permit at least once every five (5) years." Wells subject to the RCRA Permit requirements are defined as wells actively monitoring treatment, storage, and disposal (TSD) unit closures (in Part V of the Permit); TSD operating units (in Part III of the Permit); and TSD units undergoing post-closure/modified closure (Part VI of the Permit).

Additionally, the "Second Responsiveness Summary" section (Ecology 1994), which discusses interpretation of the RCRA Permit (found in Part II.F.2.a, page 99), states that Ecology requires maintenance inspections because of the likelihood that monitoring wells can act as preferential pathways for the migration of contaminants. Although the inspections are only required for the wells subject to the Permit, Ecology further states that "...the Department will pursue enforcement action outside of this Permit to assess and remediate and/or abandon, where applicable, those wells not being addressed by this Permit."

Groundwater monitoring wells included in the maintenance/inspection plan are determined by the RCRA permit and various programs such as the Hanford Site Groundwater/Vadose Zone Integration Project. Maintenance of wells supporting other programs or projects across the Hanford Site may be included in the maintenance schedule at the request of the program manager.

3.0 SCHEDULE

The list of wells to be considered for routine maintenance is developed based on a review of the past 4 years sampling history, the fiscal year sampling schedule, and the proposed 3-year sampling schedule. Routine maintenance priority is established by reviewing the following:

- whether the well is subject to RCRA permit requirements, or
- elapsed time since the last routine maintenance action or construction date (priority on longer duration).

The schedule (see Appendix A) is sufficiently flexible to accommodate changes that will occur with the addition of new wells, adjustments in the TSD unit closures, and wells that are no longer needed for monitoring. The schedule will also accommodate wells used by other programs.

4.0 WELL INSPECTIONS

Well inspections are conducted as an integral part of field maintenance activities. Inspections include visual examination of the well site, surface components of the well structure (e.g., barrier posts, concrete surface pad, protective well casing, well cap), identification of equipment installed in the well, and where possible measurements of the depths to water and/or bottom of the well. Inspections are documented on field reports.

5.0 WELL MAINTENANCE

Well maintenance for groundwater monitoring wells, at a minimum, will include the following tasks:

1. Removing groundwater sampling pump system and/or aquifer testing instrumentation/equipment
2. Inspecting and repairing (or replacing, as necessary) the sampling pump system and/or aquifer testing instrumentation/equipment
3. Brushing/cleaning the well casing perforations/well screen
4. Removing debris and fill material
5. Developing the well
6. Performing borehole video camera surveillance

7. Re-installing sampling and/or aquifer testing instrumentation/equipment
8. Documenting well conditions and maintenance activities
9. Performing well inspections, as defined in Section 3.0 of this well maintenance and inspection plan.

6.0 MANAGEMENT AND CONTROL

Well maintenance activities will be performed by subcontract using approved subcontractor procedures, quality assurance and quality control plans, health and safety plan, and other appropriate and/or required documentation. The following will control environmental compliance, quality assurance, and reporting:

- BHI-EE-02, *Environmental Requirements*, establishes the overall environmental compliance requirements for BHI.
- Program implementation and procedural compliance will be monitored periodically through surveillance and self-assessments.
- Well maintenance activities will be documented and transmitted for entry into the Hanford Well Information System Database. Inspections are to be recorded in the RCRA operating records, where necessary. All documentation shall be submitted to Document and Information Services.

7.0 REFERENCES

BHI-EE-02, *Environmental Requirements*, Bechtel Hanford, Inc., Richland, Washington.

DOE-RL, Hanford Facility Wide RCRA Permit, as revised, Permit No. WA7890008967, expiration date September 27, 2004.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

RCW 18.104, "Well Construction," *Revised Code of Washington*, as amended.

RCW 70.105, "State of Washington Hazardous Waste Management Act of 1976," *Revised Code of Washington*, as amended.

WAC 173-160, "Minimum Standards for Construction and Maintenance of Wells," *Washington Administrative Code*, as amended.

8.0 BIBLIOGRAPHY

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U.S. Department of Energy, Richland Operations Office, Richland, Washington.

APPENDIX A

**ROUTINE WELL MAINTENANCE
SCHEDULE**

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 1999

Quarter: 2

Quarter: 2				LAST				SCREEN						PERFORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	UNSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT CASING SIZE	DIAM	T O P	BOT.	MTRL	SLOT SIZE	INT.	O P	BOT.
199-H4-7	A4838		9/22/86	4/3/97		9/1/95	43.47 ft	Pos. Disp.	Contain	No	6 in	6 in	43 ft	53 ft	SS	0.02 in		
199-H4-12A	A4816		11/30/86	4/3/97	9/7/95	8/24/95	27.8 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	33 ft	48 ft	SS	0.02 in		
299-E26-9	A4806		8/10/90	7/25/94		1/25/93	202.38 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	80.32 ft	200.92 ft	SS	0.01 in		
299-E26-10	A4799		8/28/90			8/27/93	200.98 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	90.46 ft	206.1 ft	SS	0.01 in		
299-E26-11	A4800		8/20/90			8/27/93	193 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	100.16 ft	205.77 ft	SS	0.01 in		
299-E35-2	A4888		8/1/90	11/5/96		8/27/93	201.58 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	90.89 ft	201.49 ft	SS	0.01 in		
399-1-10A	A5411		11/22/86	3/31/97	3/31/97	10/31/89	31.23 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	24.5 ft	39.5 ft	SS	0.04 in		
399-1-10B	A8064		10/8/91	4/3/97	4/3/97	8/7/92	31.29 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	104.5 ft	114.5 ft	SS	0.01 in		
399-1-16A	A5025		12/31/86	4/3/97	4/3/97	11/1/89	39.58 ft	Pos. Disp.	Purge to Ground	No	8 in	8 in	32.5 ft	47.5 ft	SS	0.04 in		
399-1-16B	A5028		2/28/87	8/25/97	3/31/97	10/19/90	39.07 ft	Pos. Disp.	Purge to Ground	No	8 in	8 in	105 ft	115 ft	SS	0.02 in		
399-1-17A	A5028		11/30/86	4/3/97	4/3/97	10/19/90	35.35 ft	Pos. Disp.	Contain	No	6 in	6 in	25 ft	40 ft	SS	0.04 in		
399-1-17B	A5029		12/19/86	3/31/97	3/31/97	10/19/90	33.46 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	99.5 ft	110 ft	SS	0.04 in		
399-1-18A	A5031		11/30/86	8/29/97	3/31/97	10/19/90	45.56 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	39 ft	45 ft	SS	0.04 in		
399-1-18B	A5032		1/20/87	8/25/97	3/31/97	8/7/92	44.42 ft	Pos. Disp.	Purge to Ground	No	6 in	8 in	108.5 ft	118.5 ft	SS	0.04 in		
399-48-7A	A5049		8/1/43	10/7/97		10/15/92	48.78 ft	Subm.	Purge to Ground	No	6 in						1	42 ft.
399-48-7A	A5213		8/31/43	2/27/94		10/25/95	25.14 ft	Subm.	Purge to Ground	No	12 in						1	12 ft.
399-49-1 3E	A5215		3/15/44	10/22/98		11/1/95	45.23 ft		Purge to Ground	No	6 in						1	55 ft.
399-65-72	A5302			9/16/91		2/25/91	138.71 ft	Subm.	Purge to Ground	No	12 in						1	137 ft.
399-42-16	A9385		10/31/44				53.39 ft	Subm.	Purge to Ground	No	12 in						1	55 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 1999

Quarter: 3

Quarter: 3				LAST								SCREEN				PERFORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	INT.	TOP	BOT.	
299-E23-1	A4747		4/15/48	2/25/94		3/6/92	312.35 ft	Subm.	Contain	No	8 in							1	310 ft.	340 ft.
289-E28-2	A6785		1/31/48	7/14/94		3/12/92	280.19 ft	Subm.	Contain	No	8 in							1	288 ft.	318 ft.
299-W10-1	A7136		8/11/47	10/22/96		12/12/96	223.84 ft	Subm.		No	8 in							1	109 ft.	270 ft.
699-19-43	A5075		9/30/50			7/13/93	149.97 ft	Subm.	Purge to Ground	No	8 in	6 in	127 ft	185 ft	SS			1	130 ft.	184 ft.
699-20-20	A5080		7/29/48			9/16/93	106.92 ft	Subm.	Purge to Ground	No	8 in							1	105 ft.	155 ft.
699-25-70	A5099		8/31/48	12/5/97		12/23/96	187.6 ft	Subm.	Purge to Ground	No	8 in							1	175 ft.	440 ft.
699-34-88	A5138		12/20/48	4/1/97		6/4/93	168.37 ft	Subm.	Purge to Ground	No	3 in							1	156 ft.	170 ft.
699-35-70	A5140		8/3/48	10/22/96		3/26/93	250.01 ft	Subm.	Contain	No	2 in	6 in	233 ft	253 ft	SS	0.02 in		1	235 ft.	320 ft.
699-36-81A	A5144		8/12/48	4/29/94		2/12/93	341.83 ft	Subm.	Purge to Ground	No	8 in							1	330 ft.	389 ft.
699-40-82	A5158		1/17/49	10/22/96		2/12/93	244.83 ft	Subm.	Purge to Ground	No	8 in							1	335 ft.	348 ft.
																		2	359 ft.	374 ft.
699-41-23	A5159		7/16/48	11/11/96		10/18/93	70.88 ft	Subm.	Purge to Ground	No	7 in	7 in	64 ft	79 ft	SS			1	65 ft.	115 ft.
699-45-42	A5195		6/23/48			1/26/97	184.31 ft	Subm.	Purge to Ground	No	8 in							1	158 ft.	180 ft.
699-45-69A	A5196		6/22/48	2/27/94		7/12/93	288.18 ft	Subm.	Purge to Ground	No	8 in							1	274 ft.	366 ft.
699-49-79	A5221		7/3/48			2/21/91	238.83 ft	Subm.	Purge to Ground	No	8 in							1	225 ft.	285 ft.
699-55-89	A5262		11/24/48	4/10/95		1/6/97	184.72 ft	Subm.	Purge to Ground	No	8 in							1	160 ft.	222 ft.
699-S6-E4A	A9152		4/16/48	7/7/97		9/27/93	72.74 ft	Subm.	Purge to Ground	No	8 in	4 in	71 ft	91 ft	SS	0.02 in				
699-S24-19P	B2781	Yes	9/7/49			9/13/96	23.29 ft	No Pump	Purge to Ground	No	2 in	2 in	82.5 ft	87.5 ft	SS	0.01 in				
699-S24-19Q	B2782	Yes	9/7/49			9/13/96	23.35 ft	No Pump	Purge to Ground	No	2 in	2 in	24 ft	44 ft	SS	0.01 in				
3099-47-18B	A5062	-	12/31/48	1/16/97		1/13/97	33.86 ft	Subm.	Purge to Ground	No	17 in							1	24 ft.	72 ft.

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 1999

Quarter: 4

LAST										SCREEN										PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT. DATE	ROUTINE MAINT.	UNSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT. SIZE	CASING DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.		TOP	BOT.		
189-H4-2	A5688		4/30/52	6/3/96		11/14/91	38.48 ft		Purge to Ground	No	1 in	2 in	367 ft	382 ft	SS	0.01 in							
299-E13-5	A5853		8/31/55	7/30/96		1/3/92	342.2 ft	Subm.	Purge to Ground	No	6 in						1	330 ft	365 ft				
299-E25-3	A6024		10/14/54	7/11/96		7/8/96	291.34 ft	Subm.	Purge to Ground	No	6 in						1	270 ft	312 ft				
299-W10-2	A4896		12/5/51	5/1/90		12/17/96	214.18 ft	Pos. Disp.		No	4 in						1	201 ft	229 ft				
299-W10-4	A7137		11/30/52	7/25/94		12/17/96	219.51 ft	Subm.		No	8 in						1	190 ft	245 ft				
299-W11-6	A4909		7/5/51	10/14/94		12/18/96	267.26 ft	Subm.		No	8 in						1	260 ft	310 ft				
299-W11-7	A4910		9/30/51	1/2/96		12/18/96	257.75 ft	Subm.		No	8 in						1	245 ft	260 ft				
299-W11-12	A4902		12/31/53	8/23/94		12/18/96	228.75 ft	Pos. Disp.		No	8 in						1	200 ft	250 ft				
299-W14-2	A7328		5/11/55	8/11/97		12/18/96	214.95 ft	Pos. Disp.		No	6 in						1	181 ft	222 ft				
299-W23-1	A4979		6/5/52	11/29/93		12/1/94	214.67 ft	Subm.		No	4 in	6 in	178 ft	234.5 ft	SS	0.02 in	1	180 ft	190 ft				
																	2	195 ft	260 ft				
299-W23-2	A4985		9/9/54	10/5/95		9/27/95	211.48 ft	Pos. Disp.		No	4 in						1	184 ft	235 ft				
699-17-5	A5073		12/5/50	6/10/97		3/21/98	45.21 ft	Subm.	Purge to Ground	No	7 in	7 in	42 ft	52.6 ft	SS	0.01 in	1	45 ft	72 ft				
699-31-31	A5123		2/23/56	8/7/91		1/27/97	129.31 ft	Subm.	Purge to Ground	No	8 in						1	135 ft	280 ft				
																	2	350 ft	378 ft				
																	3	395 ft	405 ft				
																	4	440 ft	450 ft				
																	5	530 ft	540 ft				
699-37-43	A5146		11/3/55	12/5/97		1/27/97	288.55 ft	Subm.	Purge to Ground	No							1	275 ft	334 ft				
																	2	365 ft	385 ft				
																	3	415 ft	435 ft				
699-43-89	A5181		1/16/51	12/5/96		12/2/96	183.94 ft	Subm.	Purge to Ground	No	8 in						1	175 ft	247 ft				
																	4	475 ft	495 ft				
699-46-21B	A5197		9/20/55	11/11/96		3/23/95	132.47 ft	Subm.	Purge to Ground	No	6 in						1	128 ft	220 ft				
																	1	139.5 ft	151 ft				
699-S6-E4CS	B2831	Yes	5/31/53	6/6/97			0 ft	Pos. Disp.	Purge to Ground	No	2 in	2 in	227 ft	232 ft	SS	0.01 in							
699-S6-E4CT	B2832	Yes	5/31/53	6/6/97			0 ft	Pos. Disp.	Purge to Ground	No	2 in	2 in	145 ft	150 ft	SS	0.01 in							
699-S6-E4D	A5406		11/11/53			9/27/93	58.19 ft	Subm.	Purge to Ground	No	8 in	8 in	22 ft	72 ft	SS	0.015 in	1	60 ft	140 ft				

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Rev. 0

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2000

Quarter: I

Quarter: I			LAST					SCREEN					PERFORATION						
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT. R	ROUTINE MAINT.	INSPCT.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	OP	ROT.
299-E13-14	A4726		12/31/56	11/29/93		1/2/92	344.13 ft	Subm.	Purge to Ground	No	6 in						1	320 ft.	353 ft.
299-E24-8	A4758		5/23/57	7/7/97		12/5/96	288.08 ft	Subm.	Purge to Ground	No	6 in						1	280 ft.	372 ft.
299-E28-4	A4804		8/27/58	5/23/97		5/9/91	217.19 ft	Subm.	Purge to Ground	No	6 in						1	225 ft.	281 ft.
299-E28-8	A6788		9/30/57	5/28/96		3/14/90	262.99 ft		Purge to Ground	No	6 in						1	250 ft.	294 ft.
299-W12-1	A4912		5/31/58	10/8/93		12/19/98	283.42 ft	Subm.		No	8 in						1	260 ft.	309 ft.
299-W19-4	A4958		2/15/60	11/10/95		12/10/98	276.43 ft	Subm.		No	8 in						1	235 ft.	295 ft.
																	2	300 ft.	443 ft.
																	3	465 ft.	485 ft.
																	4	520 ft.	535 ft.
299-W22-9	A7834		5/4/56	12/5/97		1/19/95	230.65 ft	Pos. Disp.		No	8 in						1	220 ft.	245 ft.
																	2	255 ft.	299 ft.
299-W22-20	A7843	--	6/19/57	7/31/96	--	7/25/96	227.69 ft	Subm.		No	6 in						1	205 ft.	299 ft.
699-1-18	A8120		1/31/58	8/16/95			44.75 ft	Subm.	Purge to Ground	No	6 in						1	109 ft.	265 ft.
699-9-E2	A5349		1/31/58			5/23/95		Subm.	Purge to Ground	No	8 in						1	15 ft.	255 ft.
699-17-70	A5074		10/30/58			7/28/93	88.53 ft	No Pump	Purge to Ground	No	8 in						1	75 ft.	125 ft.
699-28-40	A5110		5/16/56	11/27/98		9/20/93	159.13 ft	Subm.	Purge to Ground	No	8 in						1	150 ft.	270 ft.
																	2	275 ft.	295 ft.
																	3	320 ft.	330 ft.
																	4	335 ft.	355 ft.
																	5	385 ft.	405 ft.
																	6	455 ft.	462 ft.
699-31-31P	A9633	Yes	2/23/58	9/9/97			129.24 ft		Purge to Ground	No	1.5 in								
699-32-62	A5128		4/8/60	10/21/96		8/17/95	281.3 ft	Pos. Disp.	Contain	No	8 in						1	275 ft.	500 ft.
																	1	425 ft.	445 ft.
																	1	485 ft.	495 ft.
699-32-70B	A5129		8/9/57	10/21/94		2/16/93	-0.35 ft	Subm.	Purge to Ground	No	8 in						1	207 ft.	330 ft.

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2000

Quarter: I

WELL NAME	WELL ID	PIEZO	DRILL DATE	LAST				PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN					PERFORATION		
				MAINT.	ROUTINE MAINT.	INSPEC.	DTW					DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	OP	BOY.
699-32-72A	A5130		7/31/57	4/1/97		12/23/98	225.54 ft	Subm.	Purge to Ground	No	8 in						1	210 ft	240 ft
																	1	240 ft	275 ft
																	1	275 ft	280 ft
																	1	280 ft	370 ft
																	1	370 ft	380 ft
																	1	380 ft	410 ft
																	2	415 ft	420 ft
																	3	465 ft	485 ft
699-33-56	A5133		7/31/58	8/11/93		3/23/93	315.16 ft	Subm. --	Purge to Ground	No	10 in	10 in	315.2 ft	409 ft	SS	0.02 in			
699-35-68A	A5139		8/12/57	5/13/94		2/12/93	291.31 ft	Subm.	Contain	No	8 in						1	260 ft	350 ft
699-36-65	A5148		12/31/59	8/23/94		2/12/93	326.85 ft	Subm.	Purge to Ground	No	8 in						1	220 ft	520 ft
699-38-70	A5149		6/30/57	3/16/94		3/26/93	267.27 ft	Subm.	Purge to Ground	No	8 in						1	255 ft	320 ft
699-42-12A	A5163		12/12/57			9/23/93	138.39 ft	Subm.	Purge to Ground	No	6 in						1	101 ft	183 ft
																	1	120 ft	320 ft
699-44-64	A5188		1/31/60	5/18/95		12/23/96	320.82 ft	Subm.	Purge to Ground	No	8 in						1	316 ft	442 ft
699-62-43F	A8944		8/31/59			6/13/95	31.2 ft	Subm.	Purge to Ground	No	8 in						1	25 ft	73 ft
699-S3-E12	A5374		9/30/60	11/11/91		10/18/93	42.21 ft	Subm.	Purge to Ground	No	8 in						1	35 ft	200 ft
699-S11-E12	A9778	Yes	9/14/60	5/18/97			-16.32 ft	No Pump	Purge to Ground	No	2 in								

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2000

Quarter: 2

Quarter: 2				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT. DATE	ROUTINE MAINT.	UNSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	O P	BOT.
199-N-5	A5814		5/7/84	9/17/96		5/16/91	67.02 ft	Pos. Disp.	Contain	No	8 in						1	34 ft.	120 ft.
299-E15-1	A6727		1/12/81	7/1/97		2/5/92	281.07 ft	Subm.	Purge to Ground	No	6 in	6 in	468 ft	510 ft	SS	0.01 in			
299-E17-9	A6742		5/31/88	10/23/96		8/10/93	317.49 ft	Subm.	Contain/Reg	TRUCK	No	6 in					1	310 ft.	320 ft.
299-E25-15	4763		7/31/69	11/29/93		2/2/90	287.7 ft			No	4 in						1	270 ft.	338 ft.
299-E28-13	A6791		12/31/86	4/25/97		4/25/97	306.37 ft	Subm.	Purge to Ground	No	6 in						1	287 ft.	359 ft.
299-E33-25	A6858		2/28/69	11/29/93		2/6/90	225.77 ft				6 in						1	199 ft.	233 ft.
299-W11-14	A4903		12/21/82	7/30/96		5/10/91	265.3 ft	Subm.		No	6 in						1	250 ft.	313 ft.
299-W11-18	A7284		3/1/67	10/22/96		12/18/96	255.37 ft	Subm.		No							1	227 ft.	295 ft.
99-8-25	A5334		1/25/71	11/19/91		10/13/93	111.6 ft	Subm.	Purge to Ground	No	6 in	6 in	103 ft	180 ft	SS		1	110 ft.	168 ft.
99-10-E12	A5085		8/17/82	11/11/91		1/30/97	72.21 ft	Subm.	Purge to Ground	No	8 in						1	60 ft.	355 ft.
99-20-E12S	A9817	Yes	11/7/81	10/7/97		10/16/93	78 ft	No Pump	Contain	No	2 in								
99-26-89	A5108		12/11/62	10/24/96		6/3/93	184.75 ft	Subm.	Purge to Ground	No	8 in						1	165 ft.	488 ft.
99-27-8	A5109		1/4/60	1/20/89		10/18/93	72.91 ft	Subm.	Purge to Ground	No	6 in	6 in	67 ft	77 ft	GALV	0.015 in	1	67 ft.	145 ft.
99-32-43	A5127		8/31/88	2/15/95		9/20/93	116.17 ft	Subm.	Purge to Ground	No	6 in						1	110 ft.	120 ft.
99-33-42	A5132		7/18/68	5/6/97		9/20/93	115.2 ft	Subm.	Purge to Ground	No	5 in	5 in	109 ft	119 ft	SS	0.02 in	1	111 ft.	121 ft.
99-34-41B	A5135		2/18/71	11/28/96		9/20/93	170.2 ft	No Pump	Purge to Ground	No	6 in						1	150 ft.	175 ft.
99-36-93	A5145		1/31/82	12/11/97			177.01 ft	Subm.	Purge to Ground	No	6 in						1	175 ft.	625 ft.
99-40-1	A5152		10/31/61	9/18/95		10/16/93	74.73 ft	Subm.	Purge to Ground	No	6 in						1	65 ft.	220 ft.
99-53-47A	A5239		2/21/66	6/8/97		2/26/93	32.56 ft	Subm.	Contain	No	6 in						1	22 ft.	33 ft.
																	1	23 ft.	34 ft.
99-66-23	A5306		10/5/61			1/8/97	22.99 ft	Subm.	Purge to Ground	No	8 in						1	20 ft.	96 ft.
99-72-73	A5323		9/20/61	8/13/92		2/26/91	83.83 ft	Subm.	Purge to Ground	No	8 in						1	60 ft.	176 ft.
99-84-35A	A5342		10/5/62	7/1 2/86		6/12/95	22.43 ft	No Pump	Purge to Ground	No	8 in						1	10 ft.	355 ft.
99-83-25	A5373		2/28/71			7/8/93	126.93 ft	Subm.	Purge to Ground	No	8 in						1	114 ft.	172 ft.
99-S6-E14A	A5405		8/9/62	1 1/19/91		12/11/96	24.52 ft	Subm.	Purge to Ground	No	6 in						1	20 ft.	180 ft.
99-S12-29	A5385		10/25/62	10/21/98		6/4/93	83.78 ft	Subm.	Purge to Ground	No	1.5 in						1	83 ft.	115 ft.
																	2	125 ft.	175 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2000

Quarter: 3

Quarter: 3				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOY.	MTRL	SLOT SIZE	INT.	TOP	BOT.
299-E25-17	A8031		7/20/76	7/15/96		3/23/92	275.1 ft	Subm.	Purge to Ground	No	6 in						1	273 ft.	295 ft.
299-E25-19	A4765		9/30/76	10/21/94		10/24/94	174.8 ft	Subm.	Purge to Ground	No	6 in	6 in	320 ft	340 ft	SS	0.01 in	1	270 ft.	295 ft.
299-E28-23	A6799		8/6/79	12/31/96		10/24/89	285.77 ft	Subm.	Contain	Yes	4 in	4 in	278 ft	328 ft	SS	0.01 in			
299-W10-8	A4899		6/27/73	11/26/97		12/17/96	229.54 ft	Subm.		No	6 in	6 in	211 ft	251 ft	SS	0.01 in			
299-W10-12	A4889		8/30/74	8/21/91		12/17/96	223.63 ft	Subm.		No	6 in						1	196 ft.	248 ft.
299-W11-24	A4906		8/31/73	4/30/97		12/18/96	236.63 ft	Pos. Disp.	- - - - -	No	5 in	6 in	210 ft	250 ft	SS	0.02 in			
299-W14-5	A5475		10/31/74	9/12/94		9/12/94	209.52 ft	Subm.		No	6 in						1	190 ft.	225 ft.
299-W14-6	A7331		12/31/74	9/8/95		1/21/92	206.93 ft	Subm.		No	6 in						1	195 ft.	225 ft.
299-W23-8	A7893		8/11/72	8/1/96		5/18/95	212.57 ft	Subm.		No	5 in						1	164 ft.	230 ft.
																	2	190 ft.	200 ft.
299-W23-10	A7884		10/3/72	11/5/96		7/18/96	211.8 ft	Subm.		No	5 in						1	186 ft.	230 ft.
499-S0-7	A8096		3/31/72	10/27/94		3/1/94	0 ft	Subm.	Purge to Ground	No	8 in						1	221 ft.	396 ft.
499-S0-8	A8099		3/31/72	3/3/95		3/1/94	0 ft	Subm.	Purge to Ground	No	8 in						1	188 ft.	281 ft.
699-20-E5A	A8428		10/27/76	11/28/96		11/9/95	97.92 ft	Subm.	Purge to Ground	No	6 in	7 in	95 ft	100 ft	SS	0.015 in			
699-29-4	A8490		9/12/79			11/9/95	104.83 ft	Subm.	Purge to Ground	No	6 in						1	96 ft.	112 ft.
699-32-22A	A5126		2/28/71	2/27/94		10/18/93	119.08 ft	Subm.	Purge to Ground	No	6 in						1	111 ft.	155 ft.
																	1	156 ft.	169 ft.
699-43-3	A8677		7/10/79	7/9/92		10/25/95	60.08 ft	Subm.	Purge to Ground	No	6 in						1	65 ft.	87.5 ft.
699-46-4	A8726		7/11/79	10/30/91			21.85 ft	Subm.	Purge to Ground	No	6 in						1	23 ft.	46 ft.
699-47-5	A8744		7/16/79	11/1/91		10/25/95	24.82 ft	Subm.	Purge to Ground	No	6 in						1	21 ft.	44 ft.
699-49-100C	A8804		8/31/76	4/30/96		4/29/96	0 ft	Subm.	Purge to Ground	No	10 in						1	326 ft.	401 ft.
699-63-58	A5292		6/30/72	11/18/91		1/27/92	91.66 ft	Subm.	Purge to Ground	No	6 in	6 in	81 ft	121 ft	SS	0.015 in			
699-64-27	A5295		8/15/74	10/18/96		6/3/93	49.09 ft	Subm.	Purge to Ground	No	8 in						1	50 ft.	74 ft.
699-66-84	A5310		6/1/72	8/10/93		2/25/91	105.38 ft	Subm.	Purge to Ground	No	5 in	5 in	96.25 ft	116.25 ft	SS	0.05 in			
699-S32-E13	A5385		9/25/79	4/19/96		12/11/96	44.28 ft	Subm.	Purge to Ground	No	8 in						1	50 ft.	70 ft.
699-S32-E13	A5386		10/4/79	5/7/90		12/11/96	47.6 ft	Subm.	Purge to Ground	No	8 in						1	50 ft.	70 ft.
699-S36-E13	A5392		9/30/79	2/3/97		9/20/93	46.39 ft	Subm.	Purge to Ground	No	8 in	8 in	52 ft	72 ft	SS	0.02 in			

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Rev. 0

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2000

Quarter: 4

Quarter: 4			LAST					SCREEN							PERFORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTL	SLOT SIZE	INT.	OP	BOT.
199-H4-15CP	A9496	Yes	12/16/86	9/24/96			-39.69 ft		Purge to Ground	No	2 in	2 in	325 ft	327 ft	SS	0.02 in			
199-H4-15CQ	4623	es	12/16/86	11/25/96		11/15/97	-27.58 ft		Purge to Ground	No	2 in	2 in	295 ft	297 ft	SS	0.02 in			
199-H4-15CR	A4824	Yes	12/16/86	9/24/96		1/15/97	31.54 ft		Purge to Ground	No	2 in	2 in	194 ft	196 ft	SS	0.02 in			
199-N-47	A5834		11/30/84	4/3/97		3/23/95	55.69 ft	Subm.	Purge to Ground	No	8 in	8 in	53 ft	73 ft	SS	0.02 in			
299-E25-26	A4771		4/4/85	10/21/96		4/9/93	268.4 ft	Subm.	Purge to Ground	No	4 in	4 in	270 ft	290 ft	SS	0.01 in			
299-E26-6	A4805		5/6/82	5/12/97		8/12/92	218.01 ft	Subm.	Purge to Ground	No	8 in	8 in	326 ft	396 ft	SS	0.02 in			
299-E28-24	A6800		2/28/80	4/25/97		4/11/84	285.54 ft	Pos. Disp.	Contain	No	4 in	4 in	227 ft	327 ft	SS	0.01 in			
299-E26-25	A6801		2/28/80	4/18/97		10/24/89	265.42 ft	Subm.	Contain	No	4 in	4 in	279 ft	329 ft	SS	0.01 in			
299-W19-14	A4946		8/14/84	4/19/96		4/26/85	242.22 ft	Pos. Disp.		No	6 in	5 in	207 ft	250 ft	SS	0.02 in			
299-W19-15	A4947		8/7/85	10/21/94		10/24/84	242.95 ft	Subm.		No	5 in	5 in	225 ft	275 ft	SS	0.02 in			
499-S1-8J	A8114		3/27/85	3/8/94		3/1/84	0 ft	Subm.	Purge to Ground	No	10 in	10 in	360 ft	390 ft	SS	0.04 in			
699-24-34B	A5091		3/11/87	1/20/96		8/24/93	133.41 ft	Pos. Disp.	Purge to Ground	No	4 in	6 in	122 ft	137 ft	SS	0.03 in			
699-24-35			3/2/87	1/22/96		9/14/83	138.77 ft	Pos. Disp.	Purge to Ground	No	4 in	6 in	122 ft	143 ft	SS	0.03 in			
699-26-34A	A5102		7/3/86	3/1/84		6/25/91	125 ft	Subm.	Purge to Ground	No	4 in	5 in	117.2 ft	137 ft	SS	0.02 in			
699-26-35C	A5104		12/23/86	1/26/96		12/17/93	132.49 ft	Subm. Purge	to Ground	No	4 in	4 in	193 ft	203 ft	SS	0.01 in			
699-31-11	A8503		5/31/80	7/17/95		5/9/94	93.62 ft	Subm.	Purge to Ground	No	4 in	6 in	205 ft	255 ft	SS	0.01 in			
699-37-E4	A8588		7/29/82	9/18/92		4/24/92	27.39 ft	Subm. Purge	to Ground	No	6 in	6 in	83 ft	98 ft	SS	0.01 in			
699-38-15	A8594		12/4/79	11/5/91			0 ft	Subm. Purge	to Ground	No	6 in						1	60 ft.	80 ft.
699-42-40C	A5169		4/30/82	8/5/97		1/28/97	136.26 ft	Subm.	Purge to Ground	No	8 in	6 in	306 ft	390 ft	SS				
699-52-46A	A5234		5/31/80	5/18/95		8/24/95	47.51 ft	Subm. Purge	to Ground	No	5 in	5 in	175 ft	225 ft	SS	0.01 in			
699-53-47B	A5240		2/3/84	4/25/96		4/5/90	32.48 ft	Subm.	Contain	No	8 in	8 in	26 ft	46 ft	SS	0.05 in			
699-53-48A	A5241	3/23/84		8/26/96		1/21/92	36.78 ft	Pos. Disp.	Contain	No	8 in								
699-53-48B	A5242		3/30/84	5/18/95		3/11/93	37.97 ft	Subm.	Contain	No	6 in	6 in	17.5 ft	37 ft	SS	0.05 in			
699-56-53	A5265		3/30/82	8/1/97		1/29/97	33.35 ft	Subm.	Purge to Ground	No	6 in	6 in	190 ft	270 ft	SS				
699-S28-E0	A9206		5/20/81	8/5/96			0 ft	Subm.	Purge to Ground	No	12 in						1	90 ft.	180 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2001

Quarter: I

Quarter: 1				LAST				SCREEN						PERFORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int. TOP	BOT.
199-N-57	A4700		8/30/87	8/30/95		2/7/95	68.74	ft Pos. Disp.	Purge to Ground	No	6 in	6 in	58 ft	73 ft	SS	0.02 in		
199-N-59	A4702		11/30/87	2/13/98		2/7/95	70.54	ft Pos. Disp.	Purge to Ground	No	6 in	6 in	65.5 ft	71.5 ft	SS	0.02 in		
199-N-69	A4712		8/7/88	7/27/94		4/26/91	71.89	ft Pos. Disp.	Purge to Ground	No	6 in	6 in	90 ft	100 ft	SS	0.01 in		
299-E18-1	A4743		7/27/88	8/9/94		1/11/93	319.78	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	308.5 ft	329 ft	SS	0.02 in		
299-E24-19	A4754	9/27/89	1	1/29/93		2/8/90	239.35	ft Pos. Disp.	Contain No	4 in	4 in	79.65	A	300.68 ft	SS	0.01 in		
299-E25-29P	A4774	yes	10/7/87	12/11/97		8/27/93	0	ft Pos. Disp.	Purge to Ground	No	2 in	2 in	325 ft	330 ft	SS			
299-E25-29Q	A4775	yes	10/7/87	8/29/97		8/27/93	272.02	ft Pos. Disp.	Purge to Ground	No	2 in	2 in	256.6 ft	276.5 ft	SS			
299-E25-32Q	A4780	yes	5/25/88	5/6/97		10/16/93	0	ft Pos. Disp.	Purge to Ground	2 in	4 in	260 ft	280	A	SS	0.02 in		
299-E27-12	A4810		10/9/89	10/22/96		2/2/90	260.7	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	46.52 ft	267.55 ft	SS	0.01 in		
299-E27-13	A4811		10/12/89	12/1/93		9/15/93	268.51	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	53.68	R	274.68 ft	SS	0.01 in	
299-E27-15	A4813		10/3/89	11/10/95		9/25/95	252.74	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	38.03	A	259.03 ft	SS	0.01 in	
299-E28-25	A4822		11/6/87	3/1/94		8/10/93	266.53	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	278.8 ft	298.8	A	SS	0.02 in	
299-E32-2	A4830		8/29/87	2/5/98		10/4/89	269.66	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	57.76 ft	277.75 ft	SS	0.03 in		
299-E32-4	A4832		9/30/87	2/27/98		11/6/91	285.9	ft Pos. Disp.	Purge to Ground	No	3 in	4 in	76.08 ft	298.08 ft	SS	0.03 in		
299-E33-31	A4856		9/11/89	9/23/97		5/19/93	247.08	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	234.9 ft	255.9 ft	SS	0.01 in		
299-E34-2	A4877		9/30/87	3/1/94		2/7/90	230.4	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	19.95 ft	240.25 ft	SS	0.03 in		
299-W9-1	A5017	10/22/87	1	0/23/98		8/24/93	283.35	ft Pos. Disp.	No	4 in	4 in	266 ft	286 ft	SS	0.03 in			
299-W10-13	A4890		9/25/87	10/22/98		8/24/93	244.66	ft Pos. Disp.		No	4 in	4 in	227 ft	247 ft	SS	0.04 in		
299-W10-14	A4891	11/18/87		11/29/93		6/25/93	245.55	ft Pos. Disp.	No	4 in	4 in	427 ft	447	n	SS	0.03 in		
299-W18-22	A4934	9/25/87		3/25/94		3/11/92	213.21	ft Pos. Disp.	No	4 in	4 in	416.5 ft	447.5	ft	SS	0.03 in		
699-24-34C	A5092		4/8/87	1/21/98		8/24/93	132.53	ft Pos. Disp.	Purge to Ground	No	4 in	6 in	121	A	136 ft	SS	0.03 in	
699-40-39	A5155	8/7/89		10/24/98		4/8/93	159.58	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	00.96 ft	211.54	R	SS	0.01 in	
699-42-42B	A5171	10/15/88		1/8/90		4/8/93	177.44	A Pos. Disp.	Purge to Ground	No	4 in	4 in	192.4 ft	202.7 ft	SS	0.02 in		
699-43-41E	A5174	8/4/89		8/16/95		4/9/93	136.9	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	35.19 ft	145.84 ft	SS	0.01 in		
699-S37-E14	A5394		11/3/88	11/9/90		10/2/89	58.13	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	47.25 ft	63 ft	SS	0.02 in		
699-S40-E14	A5398		11/3/88	9/8/95		8/17/95	48.95	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	33.55	n	59.5 ft	SS	0.01 in	
699-S43-E12	A5404			1/49/99		10/2/89	51.88	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	42 ft	58n	SS	0.02 in		

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2001

Quarter: 2

Quarter: 2				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-B4-5	A5540		2/20/90	6/2/93		6/26/92	83.11	A	Pos. Disp. Purge to Ground	No	4 in	4 in	76.45	ft	97.1	ft	SS	0.02 in	
299-E27-11	A4809		10/18/89	11/29/93		2/7/90	243.05	A	Pos. Disp. Purge to Ground	No	4 in	4 in	30.38	ft	251.38	ft	SS	0.01 in	
299-E27-14	A4812		10/17/89	3/14/94		2/2/90	258.11	A	Pos. Disp. Purge to Ground	No	4 in	4 in	45.83	ft	266.83	ft	SS	0.01 in	
299-E27-16	A4814		4/17/90	5/25/92		8/27/93	251.93	R	Pos. Disp. Purge to Ground	No	4 in	4 in	238.7	ft	259.7	R SS	0.01 in	-	
299-E28-28	A4824		4/17/90	3/1/94		11/6/91	285.17	R	Pos. Disp. Purge to Ground	No	4 in				1		275 ft.	295	ft.
299-E33-8	A4872		10/31/53	3/25/98	5/18/90	2/1/90	250.24	A	Subm. Purge to Ground	No	8 in						230 ft.		257 ft.
299-E33-20	A4847		7/31/56	11/21/97	11/7/89	10/22/93	249.45	R	Subm. Purge to Ground	No	6 in				1		225 ft.	251	ft.
299-E33-34	A4859		4/23/90	9/19/95		1/25/93	232.84	ft	Pos. Disp. Contain	No	4 in				1		219 ft.	239	ft.
299-E33-35	A4860		4/17/90	9/19/95		8/27/93	242.94	ft	Pos. Disp. Purge to Ground	No	4 in				1		228 ft.	249	ft.
299-E33-36	A4861		4/17/90	4/29/94		8/10/93	247.44	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	234.5	ft	255.4	ft	SS	0.01 in	
299-E34-8	A4883		4/20/90	11/5/96		8/27/93	240.54	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	227.9	ft	247.9	ft	SS	0.01 in	
299-W11-23	A4905	--	7/11/90	10/7/97	3/17/90	12/18/96	237.66	R	Subm.	No	6 in				1		200 ft.	240	ft.
299-W22-40	A4971		5/15/90	9/23/96		D/I	9/96	245.28	ft	Pos. Disp.	No	4 in	4 in	24.14	ft	244.49	A SS	0.01 in	
299-W22-41	A4972		5/15/90	4/1/97		5/13/91	244.73	ft	Pos. Disp.	No	4 in	4 in	24.09	ft	245.33	A SS	0.005 in		
299-W22-42	A4973		5/15/90	9/15/93		5/13/91	244.17	ft	Pos. Disp.	No	4 in	4 in	23.08	ft	243.39	ft	SS	0.01 in	
299-W22-43	A4974		5/15/90	1/23/96		5/13/91	242.72	ft	Pos. Disp.	No	4 in	4 in	23.67	ft	244.01	ft	SS	0.01 in	
299-W23-14	A4983		4/20/90	11/5/96		8/28/93	212.4	ft	Pos. Disp.	No	4 in	4 in	93.98	ft	215.26	ft	SS	0.01 in	
299-W26-9	A4995		5/4/90	8/8/95		1/18/95	203.76	ft	Pos. Disp.	No	4 in	4 in	184.6	ft	204.9	ft	SS	0.01 in	
699-49-57A	A5219		7/30/56	11/11/94	11/27/89	10/16/92	152.72	R	Subm. Contain	No	8 in				1		144 ft.	161	ft.
699-52-54	A5236		5/22/90	9/24/95		10/14/92	167.93	ft	Pos. Disp. Contain	No	4 in	4 in	56.45	ft	166.85	ft	SS	0.02 in	
699-S30-E10	A5375		11/14/89	8/21/91		9/27/93	41.24	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	34.7	ft	55.02	R SS	0.01 in		
699-S30-E10	A5376		1/19/90	11/6/91		9/27/93	32.4	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	34.35	ft	54.7	ft	SS	0.01 in	
699-S31-E10	A5379		1/16/90	9/8/95		9/21/93	32.8	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	28.52	ft	46.8	ft	SS	0.01 in	
699-S31-E10	A5380		1/9/90	11/8/91		9/21/93	32.13	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	26.18	ft	41.18	ft	SS	0.01 in	
699-S31-E8A	A5384		10/31/89	11/11/94		2/23/93	18.6	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	13.8	ft	33.6	ft	SS	0.02 in	
699-S34-E10	A5388		2/2/90	1/16/96		9/20/93	28.23	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	21.3	ft	41.6	ft	SS	0.01 in	
699-S38-E12	A5396		12/11/89			2/23/93	51.32	ft	Pos. Disp. Purge to Ground	No	4 in	4 in	43.81	ft	63.85	ft	SS	0.01 in	

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2001

Quarter: 3

Quarter: 3				LAST								SCREEN				PER FORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL.	SLOT SIZE	INL	TOP	BOT.	
299-E33-5	A4870		8/30/55	10/7/97	9/28/90	5/10/95	234.29 ft	Subm.	Contain	No	4 in							1	218 ft.	235 ft.
299-E33-7	A4871		4/30/55	6/25/92	9/27/90	6/17/92	227.03 ft	Pos. Disp.	Contain	No	4 in							1	215 ft.	230 ft.
299-E33-12	A4839		9/22/53	2/24/93	8/31/90	10/19/92	221.96 ft	Subm.	Purge to Ground	No	4 in	4 in	305 ft.	365 ft.	SS	0.01 in				
299-E33-13	A4840		10/31/53	10/7/97	9/25/90	10/18/92	227.82 ft	Subm.	Contain	No	4 in							1	210 ft.	235 ft.
299-E33-15	A4842		2/28/53	10/29/97	9/25/90	10/20/92	226.68 ft	Subm.	Purge to Ground	No	4 in							1	222 ft.	237 ft.
299-E33-18	A4844		2/28/50	10/7/97	8/31/90	10/20/92	251.49 ft	Subm.	Contain	No	8 in							1	240 ft.	260 ft.
299-E33-28	A4850		3/31/59	12/2/96	8/28/90	10/15/92	233.29 ft	Pos. Disp.	Contain	No	6 in							1	199 ft.	220 ft.
299-W10-18	A4895		12/12/90	2/12/98		1/20/92	219.86 ft	Pos. Disp.		No	4 in	4 in	99.75 ft	221.05 ft	SS	0.01 in				
299-W15-22	A4925		1/16/91	2/17/98		1/20/92	220.29 ft	Pos. Disp.		No	4 in	4 in	198.5 ft	219.8 ft	SS	0.01 in				
299-W18-25	A4937		12/11/90	6/3/96		8/24/93	213.5 ft	Pos. Disp.		No	4 in	4 in	193.5 ft	214.8 ft	SS	0.01 in				
299-W23-13	A4982		12/4/90	2/5/97		9/8/93	214.65 ft	Pos. Disp.		No	4 in	4 in	195.9 ft	217.17 ft	SS	0.01 in				
399-2-1	A5043		11/30/48	6/28/96	11/26/90	8/7/92	31.13 ft	Subm.	Purge to Ground	No	8 in							1	18 ft.	75 ft.
399-3-1	A5046		10/31/48	4/25/96	11/26/90	10/19/90	40.43 ft	Subm.	Purge to Ground	No	8 in							1	20 ft.	65 ft.
399-4-1	A5052		2/28/51	8/26/96	1/15/91	8/8/92	52.06 ft	Subm.	Purge to Ground	No	8 in							1	25 ft.	80 ft.
399-4-9	A5056		9/30/76	11/12/96	1/16/91	8/8/92	38.19 ft	Subm.	Purge to Ground	No	8 in	8 in	38 ft	58 ft	SS	0.02 in				
399-6-1	A5058		5/31/50	2/11/92	1/15/91	8/7/92	44.73 ft	Subm.	Purge to Ground	No	4 in							1	25 ft.	75 ft.
699-49-55A	A5217		7/31/61	9/28/94	8/13/90	10/16/92	30.17 ft	Pos. Disp.	Purge to Ground	No	5 in	6 in	124 ft	139 ft	SS	0.03 in	1	125 ft.	135 ft.	
699-49-57B	A5220		11/8/90			3/7/91	155.09 ft	Pos. Disp.	Purge to Ground	No	4 in	5.5 in	19.29 ft	229.6 ft	SS	0.01 in				
699-50-53A	A5227		2/2/55	4/29/96	8/13/90	10/6/92	156.65 ft	Subm.	Purge to Ground	No	4 in							1	142 ft.	156 ft.
699-50-53B	A5228		10/29/90	11/11/96		3/7/91	156.87 ft	Pos. Disp.	Purge to Ground	No	4 in	5.5 in	14.68 ft	224.68 ft	SS	0.01 in				
699-53-55A	A5244		8/24/61	12/12/94	8/23/90	10/15/92	162.83 ft	Pos. Disp.	Purge to Ground	No	5 in							1	165 ft.	280 ft.
699-53-55B	A5245		5/30/75	10/11/93	8/23/90	1/7/97	76.12 ft	Subm.	Contain	No	8 in							1	232 ft.	252 ft.
699-53-55C	A5248		5/31/75	8/8/97	6/18/90	10/15/92	175.45 ft	Subm.	Contain	No	12 in	10 in	187.3 ft	220.5 ft	SS					
699-55-57	A5259		5/16/75	10/18/98	8/22/90	10/15/92	167.64 ft	Pos. Disp.	Contain	No	6 in							1	161 ft.	170 ft.
699-S19-E13	A5370		11/9/71	11/23/92	11/13/90	10/19/90	48.87 ft	Subm.	Purge to Ground	No	6 in							1	50 ft.	80 ft.
699-S27-E14	A5371		4/30/48	2/3/97	1/15/91	1/25/95	61.64 ft	Subm.	Purge to Ground	No	8 in							1	82 ft.	116 ft.
																		2	122 ft.	140 ft.
																		3	150 ft.	158 ft.

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2001

Quarter: 3

Quarter: 3				LAST				SCREEN							PERFORATION				
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	T O P	BOT.	MTRL	S L O T SIZE	Int.	T O P	ROT.
699-S29-E12	5372		11/6/71	10/21/96	1/15/91	10/19/90	41.25 ft	Subm.	Purge to Ground	N o	5 in	5 in	59 ft	79 ft	SS		1	37 ft.	59 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2001

Quarter: 4

WELL NAME	WELL ID	PIEZO	DRILL DATE	LAST				PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN					PERFORATION		
				MAINT.	ROUTINE MAINT.	INSPEC.	DTW					DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
299-E24-20	A4756		3/14/91	10/22/96		5/19/93	288.71 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	79.23	ft	299.65	ft	SS	0.01 in		
299-E32-6	A4834		7/17/91			8/27/93	268.78 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	254.5	ft	275.5	ft	SS	0.02 in		
299-E32-7	A4835		8/13/91			8/27/93	257.77 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	245.6	ft	266.6	ft	SS	0.02 in		
299-E32-8	A4836		8/10/91			8/27/93	244.91 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in			255.3	ft	SS	0.02 in		
299-E32-9	A4837		7/12/91			8/27/93	242.74 ft	Pos. Disp.	Contain	No	4 in 4 in	230.7	ft	251.3	ft	SS	0.02 in		
299-E33-37	A4862		4/1/91	3/25/94		8/10/93	252.89	ft	Pos. Disp.	No	4 in	240.3	ft	261.1	ft	SS	0.01 in		
299-E33-38	A4863		2/1/91	10/7/97		3/29/91	231.76 ft	Pos. Disp.	Contain	No	4 in 4.5 in	18.55	ft	239.6	ft	SS	0.02 in		
299-E33-39	A4864		2/8/91	11/12/96		5/13/91	223.28 ft	Pos. Disp.	Purge to Ground	No	4 in 4.5 in	8.16	ft	229.2	ft	SS	0.02 in		
299-E33-40	A4866		4/1/91	12/1/93		5/13/91	222.85 ft	Subm.		No	4 in 4.5 in	93.92	ft	304.9	ft	R SS	0.01 in		
299-E33-41	A4867		3/28/91	10/7/97		8/10/93	254.85 ft	Pos. Disp.	Contain	No	4 in 4 in	244.8	ft	261	ft	SS	0.01 in		
299-W6-7	A5002		7/17/91	2/18/94		8/24/93	261.84 ft	Pos. Disp.		No	4 in 4 in	248.5	ft	262.2	ft	SS	0.01 in		
299-W7-11	A5006		5/24/91			8/20/93	229.52 ft	Pos. Disp.		No	4 in 4 in	4 in 2	1.5 ft	232	ft	SS	0.01 in		
299-W7-12	A5007		5/28/91			8/20/93	235.51 ft	Pos. Disp.		No	4 in 4 in	219.3	ft	240	ft	SS	0.02 in		
299-W10-17	A4894		1/17/91	8/23/94		1/20/92	219.35 ft	Pos. Disp.		No	4 in 4 in	201.4	ft	222.7	ft	SS	0.01 in		
299-W19-31	A4856		1/18/91	12/18/97		3/7/94	222.81 ft	Pos. Disp.		No	4 in 4 in	201.3	ft	222.6	ft	SS	0.01 in		
299-W22-39	A4970		2/28/91	10/2/99		8/27/93	217.96 ft	Pos. Disp.		No	4 in 4 in	199.8	ft	221.3	ft	SS	0.01 in		
299-W26-7	A5448		4/15/91			1/18/95	199.76 ft	Pos. Disp.		No	4 in 4 in	84.18	ft	205.19	ft	SS	0.005 in		
399-3-12	A5048		9/30/80	7/11/96	2/1/91	8/6/92	44.18 ft	Subm.	Purge to Ground	No	6 in						1	35 ft.	49 ft.
399-4-7	A5055		11/30/81	4/29/94	1/31/91	4/27/94	34.95 ft	Subm.	Purge to Ground	No	6 in								150 ft.
399-4-11	A5054		11/30/88	10/31/91	1/16/91	10/19/90	60.53 ft	Pos. Disp.	Purge to Ground	No	6 in 6 in	55	ft	70	ft	SS			
699-42-E9B	A8874		4/2/91			12/20/96	25.31 ft	Subm.	Purge to Ground	No	6 in 6 in	354	ft	384	ft	SS	0.01 in		
699-43-40	A5173		6/24/91	5/12/92		4/9/93	128.87 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	114.3	ft	135.3	ft	SS	0.01 in		
699-57-59	A5269		4/19/91	1/24/96		6/28/93	175.61 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	65.96	ft	186.28	ft	SS	0.02 in		
699-S27-E9A	A5425		6/26/91	1/16/96		9/27/93	39.78 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	34.8	ft	55.8	ft	SS	0.01 in		
699-S28-E12	A5428		5/17/91			8/6/92	38.18 ft	Pos. Disp.	Purge to Ground	No	4 in 4 in	38.1	ft	8.4	ft	SS	0.01 in		
699-S29-E11	A9207		6/25/91	10/27/94			38.21 ft		Purge to Ground	No	4 in	24.1	ft	45.1	ft	SS	0.01 in		
699-S31-E10	A9218		7/9/91	10/12/94			9.746 m	Pos. Disp.	Purge to Ground	No	4 in	88.5	ft	98.5	ft	SS	0.01 in		

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 1

Quarter: 1				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-K-28	A4654		9/1/79	3/31/98	10/8/91	1/21/97	71.17 ft	Subm.	Purge to Ground	No	6 in						1	63 ft.	88 ft.
199-K-29	A5480		9/30/79	2/23/95	10/8/91	1/21/97	72.35 ft	Subm.	Purge to Ground	No	6 in						1	65 ft.	85 ft.
299-E26-43	A4702		8/8/91	11/5/98		9/8/95	249.19 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	238.4 ft	259.4 ft	SS	0.02 in			
299-E26-13	A4802		8/16/91	11/29/93		4/8/93	204.75 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	191.7 ft	212.3 ft	SS	0.02 in			
299-E27-17	A4815		11/11/91			8/23/93	234.14 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	23.15 ft	244.15 ft	SS	0.02 in			
299-E33-42	A4868		11/6/91	9/23/97		5/19/93	253.94 ft	Pos. Disp.	Contain	No	4 in	4 in	238.5 ft	259.5 ft	SS	0.02 in			
299-E33-43	A4889		11/5/91	9/23/97		5/19/93	262.47 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	50.22 ft	271.34 ft	SS	0.02 in			
299-W6-6	A5001		10/24/91			8/24/93	261.78 ft	Pos. Disp.		No	4 in	4 in	18.59 ft	429.3 ft	SS	0.02 in			
299-W22-46	A4977		11/12/91	5/12/97		8/27/93	220.98 ft	Pos. Disp.		No	4 in	4 in	192.9 ft	228.9 ft	SS	0.01 in			
399-1-21A	A5414		9/25/91			10/20/93	39.24 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	31.43 ft	52.17 ft	SS	0.01 in			
399-8-5A	A5416		10/9/91			8/7/92	55.82 ft	Pos. Disp.	Purge to Ground	No	6 in	3 in	50 ft	70 ft	SS	0.01 in			
699-32-22B	A8512		8/6/91	8/8/97		1/27/97	116.03 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	774 ft	838 ft	SS	0.02 in			
699-40-40A	A5156		10/7/91	10/12/94		4/8/93	134.71 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	215.1 ft	225.87 ft	SS	0.01 in			
699-42-39A	A5185		9/26/91	10/21/96		4/8/93	141.93 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	169.4 ft	180.1 ft	SS	0.01 in			
699-42-39B	A5188		10/9/91	10/21/96		4/8/93	146.26 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	203 ft	213.8 ft	SS	0.01 in			
699-42-41	A5170		7/30/91			4/8/93	153.5 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	134.2 ft	155.2 ft	SS	0.01 in			
699-52-57	A5237		11/22/91	1/29/98		10/14/92	261.8 ft	Pos. Disp.	Contain	No	4 in	4 in	49.05 ft	159.47 ft	SS	0.02 in			
699-63-90	A5293		12/14/98	2/14/94	8/21/91	2/28/91	101.98 ft	Subm.	Purge to Ground	No	8 in						1	95 ft.	147 ft.
699-65-83	A5303		4/30/97	4/23/93	8/21/91	2/25/91	85.38 ft	Subm.	Purge to Ground	No	6 in						1	60 ft.	120 ft.
699-67-86	A5313		10/9/92	8/2/91	8/2/91	1/6/97	72.53 ft	Subm.	Purge to Ground	No	8 in						1	60 ft.	460 ft.
699-S19-E14	A5421		9/17/91			9/28/93	28.17 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	19.13 ft	39.9 ft	SS	0.01 in			
699-S22-E9A	A5422		9/23/91			9/24/93	28.08 ft	Pos. Disp.	Purge to Ground	No	6 in	3 in	22.6 ft	37.6 ft	SS	0.01 in			
699-S27-E9B	A5426		9/19/91			9/27/93	39.1 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	64.95 ft	175.62 ft	SS	0.01 in			
699-S29-E18	A5429		9/6/91			9/27/93	37.71 ft	Pos. Disp.	Purge to Ground	No	6 in	3 in	26 ft	48 ft	SS	0.01 in			
699-S29-E18	A5430		9/21/91			9/27/93	37 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	94 ft	104 ft	SS	0.01 in			
699-S29-E18	A5431		9/27/91			9/27/93	4.4 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	65.63 ft	176 ft	SS	0.01 in			
699-S32-E11	A9223		7/26/91	3/25/94		3/15/94	35.58 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	28.9 ft	50.9 ft	SS	0.01 in			
699-S34-E15	A5389		11/18/91	1/16/97		10/16/92	67.09 ft	Subm.	Purge to Ground	No	4 in	4 in	53.1 ft	83.8 ft	SS	0.02 in			

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Rev. 0

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 2

Quarter: 2				LAST								SCREEN					PERFORATION		
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTL	SLOT SIZE	Int.	TOP	BOT.
199-B2-13	A4551		3/24/92			8/23/93	22.55 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	14.4 ft	35.2 ft	SS	0.01 in			
199-B3-46	A4553		2/28/92			2/1/93	47.98 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	44.4 ft	65.5 ft	SS	0.01 in			
199-B4-9	A4560		5/28/92	2/21/96		8/13/93	72.5 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	80 ft	80 ft	SS	0.01 in			
199-B5-2	A4562		6/23/92	9/17/97		8/13/93	83.1 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	64 ft	74 ft	SS	0.01 in			
199-B8-8	A4563		7/8/92			2/1/93	76.33 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	68.7 ft	88.7 ft	SS	0.01 in			
199-B9-2	A4565		8/15/92			8/13/93	89.37 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	90.4 ft	110.4 ft	SS	0.01 in			
199-F5-45	A4595		9/9/92			11/5/92	43.02 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	36.5 ft	51.8 ft	SS	0.01 in			
199-F5-47	A4597		9/15/92			11/5/92	44.37 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	39.6 ft	59.6 ft	SS	0.01 in			
199-F5-48	A4598		9/11/92	2/24/93		11/5/92	42 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	38 ft	53.3 ft	SS	0.01 in			
199-N-19	A4668		1/31/81	4/18/95	8/13/92	4/13/95	86.55 ft	Subm.	Purge to Ground	No	8 in						1	3 ft	78 ft
299-E25-48	A4793		8/26/92			5/19/93	294.26 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	86.05 ft	306.28 ft	SS	0.01 in			
299-E32-10	A5432		4/15/92	4/29/96		4/29/96	237.34 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	25.03 ft	245.34 ft	SS	0.02 in			
299-W6-9	A5434		4/10/92	4/26/96		4/25/96	246.93 ft	Pos. Disp.		No	4 in	4 in	230.8 ft	250.8 ft	SS	0.01 in			
299-W10-19	A5438		7/24/92	7/23/97		2/15/95	230.27 ft	Pos. Disp.		No	4 in	4 in	217 ft	237 ft	SS	0.01 in			
299-W11-28	A4908		12/1/91	3/31/97		8/24/93	243.57 ft	Pos. Disp.		No	4 in	4 in	224.9 ft	245.85 ft	SS	0.01 in			
299-W22-44	A4975		11/26/91	11/5/96		10/18/93	227.59 ft	Pos. Disp.		No	4 in	4 in	205.1 ft	242.2 ft	SS	0.02 in			
299-W22-45	A4976		9/4/92	4/8/94		10/18/93	215.82 ft	Pos. Disp.		No	4 in	4 in	98.11 ft	233.9 ft	SS	0.02 in			
299-W23-15	A4984		12/3/91	8/8/96		8/26/93	204.55 ft	Pos. Disp.		No	4 in	4 in	85.73 ft	222.44 ft	SS	0.02 in			
399-1-2	A5035		4/30/50	4/17/92	12/19/91	8/7/92	42.48 ft	Pos. Disp.	Purge to Ground	No	8 in						1	25 ft	75 ft
399-1-12	A5021		11/30/86	6/8/92	6/8/92	10/31/89	40.14 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	45 ft	60 ft	SS	0.04 in			
399-1-14A	A5413		10/30/86	2/24/93	2/7/92	10/31/89	38.58 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	32 ft	47 ft	SS	0.04 in			
399-3-10	A5047		9/30/76	12/22/92	5/7/92	11/3/89	41.4 ft	Pos. Disp.	Purge to Ground	No	6 in	8 in	34 ft	49 ft	SS	0.02 in			
399-3-11	A8077		9/17/78	9/17/97	8/6/92	12/20/95	29.34 ft	Subm.	Purge to Ground	No	8 in	8 in	45 ft	65 ft	SS	0.02 in			
399-5-1	A5057		2/28/51	8/6/92	7/30/92	8/8/92	51.59 ft	Subm.	Purge to Ground	No	8 in						1	23 ft	100 ft
399-8-1	A5059		4/30/50	8/28/92	12/18/91	8/3/93	51.98 ft	Pos. Disp.	Purge to Ground	No	8 in						1	35 ft	83 ft
699-60-60	A5282		6/30/48	6/24/92	6/24/92	1/7/97	111.88 ft	Subm.	Purge to Ground	No	8 in						1	100 ft	127 ft
699-97-43	A5360		10/12/82	4/29/96	4/13/92	1/29/97	40.15 ft	Subm.	Purge to Ground	No	8 in						1	25 ft	97 ft
699-S30-E15	A5377		10/27/71	8/2/93	5/12/92	8/6/92	58.54 ft	Pos. Disp.	Purge to Ground	No	5 in	5 in	58 ft	78 ft	SS	0.02 in			

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 3

Quarter: 3				LAST				SCREEN								PER FORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	UNSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTL	SLOT SIZE	Int	TOP	BOT.
199-F5-1	A4587		9/10/88	1/14/94	6/22/93	1/22/97	35.72 ft	Subm.	Contain	NO	6 in						1	35 ft.	63 ft.
199-F5-3	A4589		12/18/92	10/24/94	6/22/93	1/22/97	38.07 ft		Contain	No	8 in						1	22 ft.	45 ft.
																	2	65 ft.	90 ft.
199-F5-6	A4600		8/10/88	9/9/89	10/11/93	1/22/97	42.83 ft	Subm.	Purge to Ground	No	6 in						1	35 ft.	74 ft.
																	2	149 ft.	182 ft.
199-F5-42	A4591		10/1/92			11/5/92	20.54 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	15.2 ft	35.2 ft	SS	0.01 in			
199-F5-48	A4596		10/15/92			11/5/92	46.26 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	40.8 ft	55.8 ft	SS	0.01 in			
199-F7-1	A4803		8/14/88	7/21/94	6/21/93	1/22/97	13.24 ft	Subm.	Purge to Ground	No	6 in						1	10 ft.	25 ft.
																	2	78 ft.	85 ft.
																	3	90 ft.	100 ft.
																	4	130 ft.	140 ft.
199-F7-2	A4804		3/21/88	10/21/96	6/21/93	8/23/93	19.17 ft	No Pump	Purge to Ground	No	4 in	6 in	15 ft	30.5 ft	SS	0.02 in			
199-F7-3	A4805		10/7/92	11/28/93		11/5/92	18.48 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	17.1 ft	32.1 ft	SS	0.01 in			
199-F8-2	A4807		7/26/80	7/21/94	6/17/93	1/22/97	35.74 ft	Pos. Disp.	Purge to Ground	No	8 in						1	10 ft.	25 ft.
																	1	25 ft.	53 ft.
199-F8-3	A4608		9/16/92	11/29/93		11/5/92	24.59 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in				SS 0.01 in			
199-F8-4	A4609		9/29/92	11/29/93		11/5/92	39.67 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	36.2 ft	46.2 ft	SS	0.01 in			
199-N-28	A4675		1/2/81	11/29/93	10/29/92	1/9/92	68.76 ft	Pos. Disp.	Purge to Ground	No	5 in	6 in	59 ft	79 ft	SS		1	12 ft.	77 ft.
199-N-52	A4695		6/24/85	3/31/97	3/29/93	8/15/89	73.8 ft	Pos. Disp.	Purge to Ground	No	8 in	7 in	56 ft	76 ft	SS	0.02 in			
199-N-77	A5442	1	1/18/92				69.74 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	84.36 ft	94.8 ft	SS	0.01 in			
299-W18-15	A4932		4/28/80	10/24/94	7/27/93	3/1/92	204.48 ft	Subm.		No	8 in						1	170 ft.	243 ft.
299-W27-2	A5410		12/18/92	3/1/94		8/27/93	227.26 ft	Pos. Disp.		No	6 in	4 in	06.14 ft	416.56 ft	SS	0.02 in			
399-5-4B	A8094		4/23/93				50.42 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	42 ft	57.3 ft	SS	0.01 in			
399-6-2	A8095		5/4/93	3/5/96		2/27/96	51.39 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	42.9 ft	58.2 ft	SS	0.01 in			
699-25-34D	A5419		10/22/92	1/16/96		12/18/92	137.8 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	128.6 ft	162.8 ft	SS	0.01 in			
699-26-34B	A5420		10/22/92	4/17/95		12/18/92	130.26 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	188.4 ft	153.4 ft	SS	0.01 in			
699-40-36	A5154		10/26/92	10/21/96		12/18/92	119.44 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	09.24 ft	219.51 ft	SS	0.01 in			
699-41-42	A5162		10/9/92	10/10/96		1/7/93	239.72 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	70.33 ft	280.59 ft	SS	0.01 in			

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 3

WELL NAME	WELL ID	PIEZO	DRILL DATE	LAST				PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN					PERFORATION		
				MAINT.	ROUTINE MAINT.	INSPEC.	DTW					DIAM.	TOP	BOT.	MTRL.	SLOT SIZE	Int.	TOP	BOT.
899-42-37	A5164		10/14/92	1/27/94		12/18/92	107.07 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	44.23 ft	154.5 ft	SS	0.01 in			
899-44-39B	A5185		11/3/92	1/8/93		1/7/93	99.79 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	98.94 ft	119.16 ft	SS	0.01 in			
899-77-36	A5330		4/12/97	8/4/93	8/4/93	1/24/92	33.46 ft	Subm.	Purge to Ground	No	8 in						1	32 ft.	82 ft.
899-81-58	A5338		9/24/92	1/22/94	8/4/93	11/8/97	45.9 ft	Subm.	Purge to Ground	No	8 in						1	35 ft.	148 ft.
899-83-47	A5341		4/23/97	8/1/96	8/16/93	1/24/92	46.69 ft	Subm.	Purge to Ground	No	8 in						1	35 ft.	150 ft.
899-87-55	A5346		6/27/99	8/12/93	8/12/93	1/20/92	71.64 ft	Subm.	Purge to Ground	No	8 in						1	59 ft.	82 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 4

Quarter: 4				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTL	SLOT SIZE	Int.	TOP	BOT.
199-N-33	A4682		8/31/83	3/3/98	2/10/94	4/25/91	70.8 ft	Pos. Disp.	Purge to Ground	No	8 in	8 in	38 ft	75 ft	SS	0.01 in			
199-N-41	A4689		4/30/84	12/13/94	2/11/94	4/25/91	70.74 ft	Pos. Disp.	Purge to Ground	No	8 in	8 in	53 ft	73 ft	SST				
299-E25-1000	A6536		11/15/93				83.034 m	Pos. Disp.	Purge to Ground	No	8 in	4 in	283.3 ft	293.3 ft	SS	0.01 in			
299-W10-21	A5440		8/27/93	5/3/94		9/22/93	222.81 ft	No Pump		No	4 in	4 in	09.25 ft	229.58 ft	SS	0.01 in			
399-3-2	A8071		10/31/47	10/21/96	2/20/94	10/18/91	0 ft	Subm.	Purge to Ground	No	10 in						1	40 ft	75 ft
399-3-3	A8072		1/31/48	10/21/96	2/20/94	11/13/91	0 ft	Subm.	Purge to Ground	No	10 in						1	52 ft	160 ft
399-4-12	A8089		12/1/80	2/20/94	2/20/94	7/10/96	0 ft	Subm.	Purge to Ground	No	12 in						1	49 ft	69 ft
699-14-38	A5068		11/21/58	8/25/93	8/25/93	1/28/97	110.68 ft	Subm.	Purge to Ground	No	8 in						1	110 ft	115 ft
																	1	116 ft	409 ft
99-19-58	A5076		1/24/59	2/14/94	2/14/94	7/29/93	154.97 ft	Subm.	Purge to Ground	No	6 in						1	149 ft	194 ft
99-19-88	A5077		11/4/57	11/12/96	2/14/94	7/29/93	130.66 ft	Subm.	Purge to Ground	No	6 in						1	75 ft	170 ft
99-22-35	A8443		1/11/94	11/11/96			134.05 ft	Pos. Disp.	Purge to Ground	No		4 in	122.4 ft	157.4 ft	SS	0.01 in			
699-23-34B	A8450		1/7/94	11/10/96		10/28/94	137.81 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	125.4 ft	185.4 ft	SS	0.01 in			
699-24-48	A8457		10/31/58	2/14/94	2/14/94	7/13/93	189.18 ft	Subm.	Purge to Ground	No	10 in						1	180 ft	670 ft
699-34-6	A5463		12/28/93	11/11/96		8/24/94	308.33 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	303 ft	323 ft	SS				
699-35-78A	A5141		8/17/80	3/31/97	12/14/93	8/27/93	205.5 ft	Subm.	Contain	No	6 in						1	180 ft	279 ft
699-37-82A	A5147		10/10/80	7/12/96	2/14/94	12/23/96	177.91 ft	Pos. Disp.	Purge to Ground	No	6 in						1	155 ft	185 ft
699-48-71	A5214		9/28/56	2/20/94	2/20/94	7/12/93	247.89 ft	Subm.	Purge to Ground	No	6 in						1	239 ft	302 ft
699-50-85			11/21/57	11/11/94	2/14/94	1/6/97	287.27 ft	Subm.	Purge to Ground	No	8 in						1	405 ft	425 ft
																	2	465 ft	485 ft
699-51-75	A5232		10/31/57	8/25/95	2/20/94	12/23/96	197.28 ft	Subm.	Purge to Ground	No	8 in						1	190 ft	370 ft
699-55-76	A5261		1/18/59	2/20/94	2/20/94	7/13/93	142.26 ft	Subm.	Purge to Ground	No	8 in						1	141 ft	221 ft
699-61-66	A5266		6/14/55	1/28/94	1/28/94	12/9/93	122.3 ft	Subm.	Purge to Ground	No	8 in						1	105 ft	160 ft
699-64-62	A5296		5/10/72	2/20/94	2/20/94	1/27/92	99.72 ft	Subm.	Purge to Ground	No	5 in	5 in	90.5 ft	110.5 ft	SS	0.01 in			
699-65-50	A5300		8/31/55	2/20/94	2/20/94	10/16/93	67.83 ft	Subm.	Purge to Ground	No	8 in						1	55 ft	125 ft
699-66-58	A5309		6/16/72	10/21/94	1/26/94	6/3/93	103.26 ft	Subm.	Purge to Ground	No	5 in	5 in	92.5 ft	112.5 ft	SS	0.02 in	1	93 ft	112 ft
699-69-35	A5348		9/28/61	2/20/94	2/20/94	9/13/93	24.59 ft	Subm.	Purge to Ground	No	8 in						1	20 ft	73 ft
699-58-19	A5408		8/31/50	12/11/97	2/14/94	1/31/90	108.18 ft	Subm.	Purge to Ground	No	8 in						1	104 ft	132 ft

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2002

Quarter: 4

Quarter: 4				LAST								SCREEN					PERFORATION		
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPCT.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	ROT.	MTRL	SLOT SIZE	Int.	OP	BOT.
699-S12-3	A5386		12/31/50	12/10/96	8/18/93	12/2/96	71.71 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	70 ft	110 ft	SS		1	55 ft.	84 ft.
699-S31-1	A5378		1/31/51	2/15/95	2/14/94	12/11/96	80.1 ft	Subm.	Purge to Ground	No	4 in						1	93 ft.	103 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter: 1

Quarter: 1				LAST								SCREEN				PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-N-105A	B2408		4/26/95					0 ft Subm.	Contain	No	8 in	8 in	69 ft	96 ft	SS	0.01 in			
299-E17-19	A4737		9/19/88	10/3/96	5/17/95	5/6/94	319.34 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	304 ft	324 ft	SS	0.01 in			
299-E25-28	A4773		4/17/88	10/30/97	10/18/96	12/9/96	262.35 ft	Subm.	Purge to Ground	No	5 in	5 in	320 ft	340 ft	SS	0.01 in			
299-E25-31	A4778		8/26/87	10/14/96	10/14/96	8/27/93	273.8 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	259 ft	279 ft	SS	0.02 in			
299-E25-42	A4791		8/26/91	10/14/96	10/14/96	4/9/93	282.73 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	267.6 ft	286.9 ft	SS	0.02 in			
299-E25-47	A4794		8/6/92	10/14/96	10/14/96	11/3/92	272.82 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	62.98 ft	283.21 ft	SS	0.01 in			
299-E26-12	A4801		8/13/91	10/18/96	10/18/96	4/8/93	230.4 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	217.6 ft	238.6 ft	SS	0.02 in			
299-E34-7	A4882		10/17/89	9/30/96		8/9/94	6/27/94	203.97 R	Pos. Disp.		4 in	4 in	193.9 F	204.55 R	SS	0.01 in			
299-W7-6	A501 2		1 1/2/87	3/20/96	3/20/96	8/20/93	228.58 R	Pos. Disp.		NO	4 in	4 in	209 ft	229 R	SS	0.03 in			
299-W10-20	A5439		4/1 1/94	4/26/96		4/25/96	234.18 R	Pos. Disp.		No	4 in	4 in	221.7 R	241.7 ft	SS	0.02 in			
299-W10-22	A9880		10/2/94				231.5 R	Pos. Disp.		No		4 in	15.55 R	245.5 R	SS	0.01 in			
299-W1 1-3	A5473		1/31/51	2/20/96	2/20/96	12/17/96	269 R	Subm.		No	8 in						1	254 ft.	267 ft.
																	2	277 ft.	320 ft.
299-W1 1-10	A4901		4/30/56	6/1 7/97	2/20/96	12/19/96	282.85 R	Subm.		No	8 in						1	256 ft.	304 ft.
299-W14-12	A4914		1 1/4/91	8/22/97	1/2/96	8/24/93	218.56 R	Pos. Disp.		No	4 in	4 in	198.4 R	218.7 R	SS	0.01 in			
299-W15-12	A4917		10/4/73	8/2/96	3/19/96	1/5/96	218.52 ft	Pos. Disp.		No	6 in						1	195 ft.	215 ft.
299-W15-32	B2423		6/1 5/95	11/18/97			206.38 R			No	6 in	6 in	94.02 ft	234.5 R	SS	0.02 in			
299-W19-12	A4945		1/25/83	8/25/97	9/1 1/95	2/15/95	221.62 R	Subm.		No	6 in	6 in	210 ft	250 ft	SS	0.02 in			
299-W22-2	A7828		5/23/56	8/1/96	7/20/95	12/12/96	214.65 R	Subm.		No	6 in						1	195 ft.	285 ft.
299-W22-10	A7835		6/11/56	8/1/96	7/17/95	6/21/95	220.48 ft	Subm.		No	6 in						1	203 ft.	310 ft.
299-W23-3	A4986		2/28/56	10/5/95	8/30/95	9/24/95	212.45 R	Subm.		No	4 in						1	178 ft.	226 ft.
299-W23-7	A4990		11/11/59	7/22/96	8/30/95	9/27/95	211.5 ft	Pos. Disp.		No	4 in						1	170 ft.	248 ft.
299-W26-10	A4992		4/4/91	12/18/96	8/26/96	8/27/93	220.91 ft	Pos. Disp.		No	4 in	4 in	01.19 ft	221.59 ft	SS	0.01 in			
299-W26-12	A5409		3/29/91	11/5/96	8/26/96	8/27/93	225.92 ft	Pos. Disp.		No	4 in	4 in	207.2 ft	227.2 ft	SS	0.01 in			
699-26-33	A5101		9/4/86	11/12/96	12/5/94	8/25/91	135.4 ft	Subm.	Purge to Ground	No	4 in	5 in	123.5 R	143.5 R	SS	0.025 in			
699-26-35A	A5103		7/14/86	11/12/96	12/5/94	12/17/93	132.7 R	Subm.	Purge to Ground	No	5 in	5 in	120.4 ft	140.4 R	SS	0.025 in			
699-36-70A	A9901		12/10/94	11/11/96		1/9/95	261.83 R	Pos. Disp.	Contain	No	4 in	4 in	257.4 ft	287.4 R	SS	0.01 in			
699-37-47A	B2822		9/30/86	11/18/96			316.06 R	Subm.	Purge to Ground	No	6 in	4 in			SS				

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter: 1

Quarter: 1				LAST				SCREEN					PERFORATION						
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	OP	BOT.
699-43-43	A5179		9/30/88	11/21/97	8/15/95	4/8/93	176.82 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	156.8 ft	177.45 ft	SS	0.02 in			
699-81-82	A5285		6/10/72	10/18/96	10/18/96	1/27/92	97.3 ft	Subm.	Purge to Ground	No	8 in						1	86 ft.	100 ft.

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter:

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LAST

WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT. DATE	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN				PERFORATION			
												DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-D8-6	A4585		12/19/91	4/1/97	12/12/96	12/16/96	92.09 ft	Pos. Disp.	Contain	No	4 in	4 in	87.5 ft	107.8 ft	SS	0.01 in			
299-E17-1	A4728		12/31/95	1/17/97	1/17/97	12/17/96	318.96 ft	Subm.	Contain	No	6 in						1	303 ft	333 ft
299-E17-14	A4732		5/11/88	1/20/87	1/20/87	12/18/96	321.89 ft	Pos. Disp.	Contain	No	4 in	4 in	309.5 ft	330 ft	SS	0.02 in			
299-E25-32P	A4779	Yes	5/25/88	9/8/89	11/4/88	4/8/93	270.4 ft	Pos. Disp.	Purge to Ground	No	2 in	2 in	320 ft	330 ft	SS	0.02 in			
299-E25-35	A4783		7/27/88	11/4/96	11/4/96	4/8/93	274.29 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	260.5 ft	281 ft	SS	0.02 in			
299-E27-8	A4817		9/30/87	12/21/94	1/22/97	2/7/96	237.48 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	225.5 ft	245.5 ft	SS	0.03 in			
299-E27-19	A6675		7/8/82	7/14/87	7/14/87		250.54 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	245 ft	265 ft	SS	0.02 in			
299-E28-17	A4820		4/24/89	8/25/97	3/12/97	5/8/91	306.91 ft	Subm.	Purge to Ground	No	5 in						1	289 ft	335 ft
299-E28-27	A4823		9/30/87	3/31/97	3/31/97	2/6/89	279.93 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	269.9 ft	289.9 ft	SS	0.03 in			
299-E33-21	A4848		4/30/87	3/2/88	4/25/97	10/23/89	268.01 ft	Subm.	Purge to Ground	No	8 in	8 in	0 ft	0 ft			1	235 ft	270 ft
																	1	270 ft	275 ft
299-E34-10	A4875		10/10/91	5/30/97	5/30/97	8/27/93	239.21 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	25.29 ft	246.35 ft	SS	0.02 in			
299-E34-11	A4876		12/20/91	5/27/97	5/27/97	8/27/93	217.14 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	207.5 ft	217.88 ft	SS	0.01 in			
299-E34-12	A5433		4/15/92	5/30/97	5/30/97		238.29 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	223.9 ft	244.9 ft	SS	0.02 in			
299-W6-2	A4997		11/13/87	5/6/97	5/6/97	8/20/93	243.17 ft	Pos. Disp.		No	4 in	4 in	224 ft	245 ft	SS	0.03 in			
299-W6-4	A4989		11/26/91	2/3/97	2/3/97	1/30/97	252.4 ft	Pos. Disp.		No	4 in	4 in	34.93 ft	255.97 ft	SS	0.01 in			
299-W6-10	A5435		2/20/92	2/6/97	2/6/97	5/9/95	265.55 ft	Pos. Disp.		No	4 in	4 in	251.2 ft	271.2 ft	SS	0.01 in			
299-W7-1	A5004		7/30/87	5/8/97	5/8/97	8/20/93	237.99 ft	Pos. Disp.		No	4 in	4 in	225 ft	245 ft	SS	0.03 in			
299-W7-3	A5009		11/23/87	6/6/97	6/6/97	8/20/93	225.81 ft	Pos. Disp.		No	4 in	4 in	449 ft	470 ft	SS	0.03 in			
299-W7-4	A5010		11/19/87	6/6/97	6/6/97	1/20/92	221.98 ft	Pos. Disp.		No	4 in	4 in	203 ft	233 ft	SS	0.03 in			
299-W7-5	A5011		11/19/87	5/8/97	5/8/97	1/20/92	222.53 ft	Pos. Disp.		No	4 in	4 in	207.7 ft	227.7 ft	SS	0.02 in			
299-W7-7	A5013		11/27/89	6/19/97	6/19/97	8/20/93	224.46 ft	Pos. Disp.		No	4 in	4 in	07.06 ft	227.8 ft	SS	0.01 in			
299-W7-8	A5014		12/13/89	6/27/97	6/27/97	8/20/93	237.8 ft	Pos. Disp.		No	4 in						1	220 ft	241 ft
299-W7-9	A5015		4/11/90	7/7/97	7/7/97	8/20/93	238.98 ft	Pos. Disp.		No	4 in	4 in	20.34 ft	241.14 ft	SS	0.01 in			
299-W7-10	A5005		4/17/90	6/27/97	6/27/97	8/20/93	240.44 ft	Pos. Disp.		No	4 in	4 in	20.51 ft	240.86 ft	SS	0.01 in			
299-W8-1	A5016		7/23/87	5/8/97	5/8/97	8/20/93	248.49 ft	Pos. Disp.		No	4 in	4 in	236.2 ft	256.5 ft	SS	0.03 in			
299-W11-27	A4907		11/21/91	2/10/98	6/6/97	8/24/93	234.61 ft	Pos. Disp.		No	4 in	4 in	13.25 ft	233.58 ft	SS	0.01 in			
299-W19-3	A7733		9/20/87	2/3/97	2/3/97	12/12/86	247.09 ft	Pos. Disp.		No	5 in						1	230 ft	280 ft

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ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter: 2

Quarter: 2			LAST				SCREEN							PERFORATION					
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SUE	Int.	OP	BOT.
299-W19-18	A7743		12/12/85	3/31/97	3/31/97	3/26/93	248.37 ft	Subm.		No	5 in	5 in	130 ft	240 ft	SS	0.01 in			
699-2-7	A8122		2/20/78	3/31/97	3/31/97	8/20/95	120.65 ft	Subm.	Purge to Ground	No				6 ft 145 ft	165 ft		145 ft	145 ft	165 ft

Quarter: 3																
LAST																
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	REQ	WATER CONT.	RPT	CASING DIA	TOP	BOT.	SCREEN	PERFORATION
199-N-28	A4677		9/17/83	4/26/86	8/15/88		73.91 N	Subm.	Contain	No		3 in	7 in	83 N	SS	0.02 in
199-N-34	A4683		9/30/83	5/12/84	4/26/88		69.58 N	Subm.	Purge to Ground	No		8 in	34 in	78 N	SST	in
199-N-71	A4714		10/28/81	3/1/84	4/27/88		71.78 N	Pos. Disp.	Purge to Ground	No		4 in	63.8 in	64.5 N	SS	0.02 in
199-N-72	A4715		10/30/81	8/6/87	4/23/88		69.42 N	Pos. Disp.	Purge to Ground	No		4 in	62.2 in	82.2 N	SS	0.02 in
299-E-17-17	A4735		6/16/88	8/6/87	2/6/89		319.52 N	Pos. Disp.	Purge to Ground	No		8 in	313 in	333 N	SS	0.02 in
299-E-17-18	A4736		4/26/88	8/29/87	2/6/90		320.36 N	Pos. Disp.	Purge to Ground	No		8 in	311.7 in	332.7 N	SS	0.02 in
299-E-24-18	A4751		8/11/87	8/11/87	2/6/90		317.96 N	Pos. Disp.	Contain	No		4 in	307 in	327 N	SS	0.02 in
299-E-24-18	A4753		9/18/88	8/25/87	8/25/87		318.83 N	Pos. Disp.	Purge to Ground	No		4 in	311.5 in	332.5 N	SS	0.01 in
299-E-25-48	A4795		8/25/92	1/25/86	1/22/88		281.84 N	Pos. Disp.	Purge to Ground	No		4 in	74.33 in	284.55 N	SS	0.01 in
299-E-27-7	A4816		10/4/82	8/30/86	6/8/85		234.42 N	Subm.	Purge to Ground	No		6 in	241 in	281 N	SS	0.02 in
299-E-27-9	A4818		8/21/87	7/24/85	12/8/87		228.83 N	Pos. Disp.	Purge to Ground	No		4 in	18.85 in	238.08 N	SS	0.03 in
299-E-27-10	A4808	-	8/19/87	8/23/84	3/6/88		224.01 N	Pos. Disp.	Purge to Ground	No		4 in	212.1 in	232.4 N	SS	0.03 in
299-E-27-18	A6674		7/14/82	8/4/87	8/4/87		248.72 N	Pos. Disp.	Purge to Ground	No		4 in	246 in	265 N	SS	0.02 in
299-E-32-5	A4833		11/9/89	12/18/88	3/6/88		201.67 in	Pos. Disp.	Purge to Ground	No		4 in	70.83 N	201.84 N	SS	0.01 in
299-E-33-16	A8855		1/31/83	10/29/87	4/3/92		230.83 N	Subm.	Purge to Ground	No		6 in				
299-E-33-17	A4843		10/31/83	11/21/87	3/10/83		231.03 N	Subm.	Purge to Ground	No		6 in				
299-E-34-3	A4878		8/18/87	11/21/87	2/7/80		211.06 N	Pos. Disp.	Purge to Ground	No		4 in	93.19 N	213.5 N	SS	0.03 in
299-E-34-5	A4880		8/15/87	8/7/87	2/7/80		188.85 N	Pos. Disp.	Purge to Ground	No		4 in	170.5 N	190.5 N	SS	0.02 in
299-E-34-9	A4884		11/5/91	6/24/84	1/20/97		228.08 N	Pos. Disp.	Purge to Ground	No		4 in	12.63 N	233.7 N	SS	0.02 in
299-W-15-17	A4921		10/28/87	8/21/87	8/26/83		230.44 N	Pos. Disp.	Purge to Ground	No		4 in	422.5 A	432.5 N	SS	0.03 in
299-W-16-23	A4935		7/1/87	12/1/93	4/9/98		241.17 N	Pos. Disp.	Purge to Ground	No		4 in	20.33 in	251 N	SS	0.03 in
299-W-27-1	A8062		6/28/84	8/21/87	11/0/96		228.09 N	Subm.	Purge to Ground	No		6 in	216 in	236 N	SS	0.01 in
699-8-17	A5333		5/31/50	10/7/97	9/24/93		126.04 N	Subm.	Purge to Ground	No		6 in	103 in	159.75 N	SS	
699-24-33	A5089		8/31/88	8/27/87	8/24/83		123.84 N	Subm.	Purge to Ground	No		8 in				
699-24-34A	A5090		2/9/87	10/5/87	8/24/83		133.82 N	Pos. Disp.	Purge to Ground	No		4 in	6 in	122.5 N		
699-24-34A	A5090		2/9/87	10/5/87	8/24/83		133.82 N	Pos. Disp.	Purge to Ground	No		4 in	6 in	122.5 N		

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter: 3

Quarter: 3				LAST				SCREEN						PERFORATION					
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	INT.	TOP	BOT.
699-25-33A	A5094		1/3/87		12/8/97	8/27/93	128.9 ft	Subm.	Purge to Ground	No	4 in	4 in	191 ft	201 ft	SS	0.01 in			
699-25-34A	A5095		7/14/86	11/12/96	12/8/97	6/25/91	130.53 ft	Subm.	Purge to Ground	No	4 in	5 in	117.9 ft	137.9 ft	SS	0.02 in		n	
699-25-34B	A5096		8/5/88	11/12/88	12/8/97	6/25/91	130.26 ft	Subm.	Purge to Ground	No	4 in	5 in	118.2 ft	138.2 ft	SS	0.02 in			
699-25-34C	A5097		4/18/87	6/28/90	12/8/97	8/27/93	135.48 ft	Pos. Disp.	Purge to Ground	No	4 in	6 in	124.2 ft	139.5 ft	SS	0.03 in			

ROUTINE WELL MAINTENANCE SCHEDULE

Program: RCRA

Fiscal Year: 2003

Quarter: 4

Quarter: 4				LAST				SCREEN								PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPCT.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-N-73	A4716		10/31/91	3/1/94	5/21/98	10/18/93	73.56 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	65.4 ft	86.1 ft	SS	0.02 in			
299-E25-34	A4782		9/19/88	10/24/96	8/22/98	8/23/89	262.82 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	51.59 ft	271.59 ft	SS	0.02 in			
299-E25-36	A4784		8/19/88	11/9/95	7/31/98	2/6/90	307.05 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	96.74 ft	317.22 ft	SS	0.02 in			
299-E25-40	A4789		9/18/89	3/28/96	8/25/98	2/2/90	265.43 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	252 ft	273 ft	SS	0.01 in			
299-E25-41	A4790		9/22/89	12/1/93	7/7/98	9/15/93	270.78 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	55.33 ft	276.34 ft	SS	0.01 in			
299-E32-3	A4831		9/30/87	1/22/94	6/6/98	2/7/90	276.12 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	266.2 ft	286.2 ft	SS	0.02 in			
299-E33-28	A4852		11/6/87	3/1/94	6/10/98	2/6/90	263.68 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	55.67 ft	275.67 ft	SS	0.03 in			
299-E33-29	A4853		9/30/87	1/21/94	8/10/98	8/2/90	272.88 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	62.75 ft	282.75 ft	SS	0.03 in			
299-E33-30	A4855		9/30/87	11/15/95	8/18/98	2/6/90	263.1 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	255 ft	275 ft	SS	0.03 in			
299-E33-32	A4857		9/5/89	9/23/97	8/19/98	2/5/90	259.82 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	246.4 ft	267.4 ft	SS	0.01 in			
299-E33-33	A4858		8/29/89	10/7/97	6/17/98	2/6/90	240.07 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	227.3 ft	248.3 ft	SS	0.01 in			
299-E33-44	B8554		9/26/98			10/13/98	239.36	Pos. Disp.		No	4 in	4 in	238 ft	253 ft	SS	0.01 in			
299-W10-23	B8545		8/19/98				272	Pos. Disp.		No	4 in	4 in	25.78 ft	26.88 ft	SS	0.01 in			
299-W10-24	B8546		10/21/98				231.41	Pos. Disp.		No	4 in	4 in	32.94 ft	268.03 ft	SS	0.01 in			
299-W10-26	B8548		8/25/98				216.80	Pos. Disp.		Yes	4 in	4 in	17.04 ft	252.13 ft	SS	.010 in			
299-W11-31	A5472		3/4/92	4/22/96	7/31/98	1258.29	n	Pos. Disp.		No	4 in	4 in	241.2 ft	261.2 ft	SS	0.02 in			
299-W14-13	B8549		8/31/98		215.8			Pos. Disp.		No	4 in	4 in	16.62 ft	251.73 ft	SS	.010 in			
299-W14-14	B8547		11/12/98		217.4			Pos. Disp.		No	4 in	4 in	16.08 ft	252 ft	SS	.010 in			
299-W15-40	B8550		9/10/98		218.08			Pos. Disp.		No	4 in	4 in	17.95 ft	253.08 ft	SS	.010 in			
299-W18-31	A4943		12/11/91	8/10/98	8/24/93	211.77	ft	Pos. Disp.		No	4 in	4 in	187.3 ft	222.3 ft	SS	0.01 in			
299-W19-41	B8551		9/23/98		220.35			Pos. Disp.		No	4 in	4 in	20.05 ft	255.14 ft	SS	.010 in			
299-W19-42	B8553		9/16/98		219.58			Pos. Disp.		No	4 in	4 in	20.28 ft	255.37 ft	SS	0.01 in			
299-W22-79	B8552		9/30/98	10/19/98		241.91		Pos. Disp.		No	4 in	4 in	242.7 ft	277.5 ft	SS	0.01 in			
299-23-34A	A5087		1/31/87	3/1/94	6/23/98	10/28/94	132.88 ft	Pos. Disp.	Purge to Ground	No	8 in	8 in	120.8 ft	136.1 ft	SS	0.03 in			
299-41-40	A5161		8/4/89	4/30/96	7/31/98	4/8/93	138.77 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	83.94 ft	174.3 ft	SS	0.01 in			
299-43-45	A5180		6/2/89	3/9/90	7/7/98	4/8/93	197.07 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	82.95 ft	203.35 ft	SS	0.01 in			

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 1999

Quarter: 2

WELL NAME	WELL ID	PIEZO	DRILL DATE	LAST				PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN					PERFORATION		
				MAINT.	ROUTINE MAINT.	INSPEC.	DTW					DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-H3-2A	A4611		11/30/86	4/3/97		8/15/95	35.83 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	36 ft	51 ft	SS	0.02 in	1	36 ft	51 ft
199-H3-2C	A4613		10/15/86	8/30/95		8/15/95	40 ft	Pos. Disp.	Contain	No	6 in	6 in	100 ft	110 ft	SS	0.01 in			
199-H4-3	A4629		5/31/74	4/23/98	5/8/92	1/15/97	45.12 ft	Pos. Disp.	Contain	No	6 in						1	34 ft	55 ft
199-H4-8	A4639		5/31/86	7/12/98		6/12/90	44.16 ft	Pos. Disp.	Contain	No	6 in		40 ft	50 ft					
199-H4-10	A4614		9/30/86	9/7/95		9/1/95	28.93 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	23 ft	38 ft	SS	0.02 in			
199-H4-12C	A4618		10/3/86	9/8/95		9/6/95	39.18 ft	Pos. Disp.	Contain	No	6 in	6 in	72 ft	82 ft	SS	0.01 in			
199-H4-13	A4619		11/30/86	9/8/95		9/6/95	42.58 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	37 ft	52 ft	SS	0.02 in			
199-H4-15B	A4622	11/30/88	10/11/85			10/6/85	31.7 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	37 ft	42 ft	SS	0.02 in			
199-N-18	A4667	2/4/81	1	1/30/93		8/15/89	72.23 ft	Subm.	Contain	No	5 in	6 in	58.5 ft	79 ft	SS	0.01 in	1	12 ft.	78 ft.
299-W14-9	A4915	6/30/81	4/25/97			8/29/94	234.85 ft	Subm.		No	6 in						1	416 ft.	440 ft.
																	1	440 ft.	450 ft.
																	2	464 ft.	470 ft.
																	3	482 ft.	488 ft.
299-W15-1	A7348		5/13/47	2/3/97		12/12/96	225.46 ft	Subm.		No	6 in						1	190 ft.	270 ft.
299-W15-4	A4929	1/30/56	5/21/86			11/9/95	212.61 ft	Pos. Disp.		No	6 in						1	170 ft.	217 ft.
299-W15-7	A5476		1/28/88			12/12/96	216.79 ft	Subm.			8 in						1	182 ft.	350 ft.
299-W15-11	A5474	3/8/88	8/15/94			1/20/94	228.05 ft	Subm.		No	8 in						1	183 ft.	297 ft.
299-W18-1	A5481	1/12/59	3/4/97			12/1/93	228.13 ft	Subm.		No	6 in						1	195 ft.	425 ft.
299-W18-4	A7522	2/9/59	11/26/97				230.93 ft	Subm.		No	8 in	6 in	197 ft	254 ft	SS		1	200 ft.	278 ft.
299-W19-20	A4949	6/11/86	10/12/94			4/30/91	244.72 ft	Subm.		No	6 in	6 in	231 ft	251 ft	SS	0.01 in			
699-39-79	A5151	9/7/48	4/25/96			2/21/91	214.91 ft	Subm.	Contain	No	8 in						1	195 ft.	210 ft.
699-51-63	A5231	11/6/56	4/25/96			7/13/93	188.71 ft	Subm.	Purge to Ground	No	8 in						1	157 ft.	183 ft.
699-70-68	A5319	7/31/54	9/16/91			2/26/91	126.2 ft	Subm.	Purge to Ground	No	8 in						1	126 ft.	147 ft.
699-73-61	A5327	9/17/82	9/5/91			2/26/91	132.42 ft	Subm.	Purge to Ground	No	8 in	6 in	108.5 ft	148.5 ft	GALV	0.015 in	1	107 ft.	146 ft.
699-78-62	A5332	5/16/57	11/4/92			2/26/91	73.88 ft	Subm.	Purge to Ground	No	8 in	6 in	67 ft	107 ft	GALV		1	70 ft.	120 ft.

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Rev. 0

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 1999

Quarter: 3

Quarter: 3				LAST								SCREEN					PERFORATION		
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSP.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	INT.	TOP	BOT.
199-H4-12B	A4817		11/30/86	9/7/95		8/24/95	39.83 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	45 ft	50 ft	SS	0.02 in			
199-H4-14	A4620		12/31/86	10/11/95		10/6/95	42.81 ft	Pos. Disp.	Contain	No	6 in	6 in	38 ft	53 ft	SS	0.02 in			
199-H4-15CS	A4625	Yes	12/16/86	9/24/96		1/15/97	31.69 ft	No Pump	Purge to Ground	No	2 in	2 in	78 ft	80 ft	SS	0.02 in			
199-H4-16	A4626		4/30/87	7/12/96		6/12/90	47.52 ft	Pos. Disp.	Purge to Ground	No	6 in		44.7 ft	59.7 ft					
199-H4-17	A4627		5/8/87	10/12/93		6/12/90	43.69 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	35 ft	45 ft	SS	0.02 in			
199-K-11	A4643		6/31/52	7/25/94	8/1/91	1/21/97	71.83 ft	Subm.	Purge to Ground	No	6 in						1	69 ft.	160 ft.
199-K-19	A4648		4/30/55	5/6/96	10/8/91	1/20/97	32.5 ft	Subm.	Purge to Ground	No	8 in						1	10 ft.	50 ft.
199-K-20	A4649		5/31/55	3/26/96	8/1/91	2/26/91	34.18 ft	Subm.	Contain	No	8 in						1	10 ft.	50 ft.
199-K-22	A4651		5/31/55	7/25/94	7/29/91	1/22/97	37.56 ft	Pos. Disp.	Contain	No	8 in						1	10 ft.	50 ft.
199-N-54	A4697		6/30/87	4/4/91		4/25/91	69.5 ft	Pos. Disp.	Contain	No	6 in	6 in	58 ft	73 ft					
199-N-64	A4708		11/19/87	10/21/96		3/28/90	64.2 ft	Pos. Disp.	Purge to Ground	No	8 in	6 in	54 ft	69 ft	SS	0.02 in			
199-N-67	A471	1	3/31/88	4/19/96		7/12/95	71.8 ft	Bladder	Contain	Yes	6 in	6 in	80.5 ft	78 ft	SS	0.02 in			
199-N-70	A471	3	8/1/88	7/21/94		4/25/91	64.52 ft	Pos. Disp.	Purge to Ground	No	6 in	6 in	89 ft	99 ft		0.01 in			
299-W15-18	A4922		8/4/87	8/30/94		8/26/93	231.12 ft	Pos. Disp.		No	4 in	4 in	208 ft	236 ft	SS	0.03 in			
299-W18-26	A4936		12/3/89	1/5/96		8/24/93	242.64 ft	Pos. Disp.		No	4 in	4 in	222.2 ft	243.3 ft	SS	0.01 in			
299-W18-27	A4939		5/7/91			8/24/93	234.08 ft	Pos. Disp.		No	4 in	4 in	16.61 ft	237.7 ft	SS	0.01 in			
299-W19-24	A4952		4/10/87	3/13/95		4/30/91	249.3 ft	Subm.		No	5 in	5 in	231 ft	251 ft	SS	0.01 in			
299-W19-26	A7747		4/1/87	2/3/97		1/24/97	246.2 ft	Subm.		No	5 in	5 in	228 ft	248 ft	SS				
299-W19-28	A4954		8/25/89	11/5/96		10/17/94	255.15 ft	Pos. Disp.		No	4 in						1	236 ft.	256 ft.
299-W19-29	A4955		8/25/89	9/29/94		4/19/91	254.02 ft	Pos. Disp.		No	4 in						1	235 ft.	255 ft.
299-W19-30	A7748		5/30/90	2/18/94		4/19/91	251.85 ft	Subm.		Yes	4 in	4 in	233.3 ft	253.3 ft	SS	0.01 in			
699-47-60	A5202		7/20/48	3/29/96	11/22/89	10/15/92	269.63 ft	Subm.	Purge to Ground	No	a in						1	250 ft.	277 ft.

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Rev. 0

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 1999

Quarter: 4

WELL NAME	WELL ID	PIEZO	DRILL DATE	LAST				PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	SCREEN					PERFORATION		
				MAINT.	ROUTINE MAINT.	INSPEC.	DTW					DIAM	TOP	BOT.	MTRL	SLOT SIZE	Int.	TOP	BOT.
199-D2-6	A4568		2/14/92			5/12/93	83.12 ft	Pos. Disp.	Contain	No	6 in	4 in	77.2 ft	98.3 ft	SS	0.01 in			
199-D5-13	A4570		11/26/91	4/1/97		12/16/96	86.34 ft	Pos. Disp.	Contain	No	4 in	4 in	76.3 ft	97 ft	SS	0.01 in			
199-D5-14	A4571		3/27/92	6/18/97		5/12/93	85.86 ft	Pos. Disp.	Contain	No	4 in	4 in	77.1 ft	98.2 ft	SS	0.01 in			
199-D5-15	A4572		3/18/92	6/18/97		8/23/93	85.36 ft	Pos. Disp.	Contain	No	4 in	4 in	77.1 ft	98.2 ft	SS	0.01 in			
199-D5-16	A4573		3/20/92	6/18/97		5/12/93	86.39 ft	Pos. Disp.	Contain	No	4 in	4 in	77.1 ft	98.2 ft	SS	0.01 in			
199-D5-17	A4574		3/18/92	6/20/94		10/16/93	82.23 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	76.99 ft	99.8 ft	SS	0.01 in			
199-D5-18	A4575		2/24/92	8/17/94		5/12/93	80.4 ft	Pos. Disp.		No	4 in	4 in	66.1 ft	93.5 ft	SS	0.01 in			
199-D5-19	A4576		2/18/92	8/17/94		5/12/93	77.73 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	74.8 ft	94.6 ft	SS	0.01 in			
199-D5-20	A4577		2/24/92			5/12/93	82.87 ft	Pos. Disp.	Purge to Ground	No	6 in	4 in	76.2 ft	97 ft	SS	0.01 in			
199-D8-54B	A4583		2/10/92			5/12/93	59.72 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	129.9 ft	140.5 ft	SS	0.01 in			
199-D8-55	A4584		2/11/92			5/12/93	58.73 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	48.6 ft	69.4 ft	SS	0.01 in			
199-H4-45	A4631		3/11/92			8/10/93	49.2 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	32.2 ft	52.8 ft	SS	0.01 in			
199-H4-47	A4633		2/26/92			8/10/93	46.87 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	38.8 ft	59.6 ft	SS	0.01 in			
199-H4-48	A4634		3/30/92	12/7/92		8/10/93	47.83 ft	Pos. Disp.	Contain	No	4 in	4 in	39 ft	59.8 ft	SS	0.01 in			
199-H4-49	A4635		3/31/92			9/13/93	45.2 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	38 ft	53.7 ft	SS	0.01 in			
199-H6-1	A4642		3/13/92			8/10/93	41.28 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	33.9 ft	54.7 ft	SS	0.01 in			
199-K-18	A4647		10/31/94	7/25/94	10/8/91	1/20/97	21.24 ft	Pos. Disp.	Purge to Ground	No	8 in						1	18 ft	60 ft
199-K-31	A4656		5/13/88	7/25/94	4/13/92	1/8/92	24.54 ft	Subm.	Purge to Ground	No	6 in	6 in	28 ft	49.5 ft	SS	0.02 in			
299-VV18-30	A4942		11/14/91			8/24/93	221.45 ft	Pos. Disp.		No	4 in	4 in	197.5 ft	234.3 ft	SS	0.02 in			
699-91-46A	A5354		3/19/92	7/12/96		3/30/93	31.62 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	23 ft	43.8 ft	SS	0.01 in			
699-93-48A	A5356		2/21/92	7/12/96		3/30/93	53.01 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	41.2 ft	62 ft	SS	0.01 in			
699-96-43	A5357		3/17/92	7/12/96		3/29/93	41 ft	Pos. Disp.	Contain	No	4 in	4 in	32.4 ft	48.5 ft	SS	0.01 in			

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 2000

Quarter: I

Quarter: 1				LAST								SCREEN				PER FORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MYRL	SLOT SIZE	INL	TOP	BOT.
199-D5-12	A4569		8/19/80	7/21/94	5/6/92	1/22/97	83.43	ft Subm.	Contain	No	8 in							1	36 ft. 90 ft.
199-H4-5	A4636		5/11/83	11/29/93	5/8/92	1/15/97	40.63	ft Pos. Disp.	Contain	No	5 in	5 in	32.2 ft	44 ft	SS	0.02 in			
199-H4-46	A4632			4/24/92		8/10/93	46.07	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	38.7 ft	59.5 ft	SS	0.01 in			
199-H5-1A	A4641		4/17/92	3/1/94	8/10/93	40.18	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	4 in	34.8 ft	50.9 ft	SS	0.01 in			
199-K-21	A4650		5/31/55	3/19/96	6/24/92	1/20/97	34.31	ft Subm.	Purge to Ground	No	8 in							1	10 ft. 50 ft.
199-K-27	A4653		9/1/79	3/12/96	7/10/92	1/21/97	71.92	ft Subm.	Purge to Ground	No	8 in							1	65 ft. 85 ft.
199-K-32A	A4657		7/21/92	3/1	2/93	2/2/93	53.72	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	44.7 ft	64.7 ft	SS	0.01 in			
199-K-32B	A4658		8/25/92	10/28/93		8/12/93	48.26	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	157 ft	167 ft	SS	0.01 in			
199-K-33	A4659			8/10/92		8/11/93	55.13	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	45.8 ft	65.8 ft	SS	0.01 in			
199-K-35	A4661		8/21/92	3/19/93	2/4/93	97.9	ft Pos.	Disp.	No	4 in	4 in	4 in	88.6 ft	108.6 ft	SS	0.01 in			
199-K-36	A4662		8/24/92	3/1 2/93		2/4/93	96.22	ft Pos. Disp.	Contain	No	4 in	4 in	89 ft	109 ft	SS	0.01 in			
199-K-37	A4663			8/4/92		8/23/93	63.08	ft Pos. Disp.	Purge to Ground	No	4 in	4 in	43.3 ft	63.3 ft	SS	0.01 in			
199-N-14	A4684		4/30/89	10/23/96	8/12/92	8/7/95	67.08	ft Pos. Disp.	Contain	No	8 in							1	60 ft. 78 ft.
199-N-16	A4685		2/26/81	1/30/93	8/13/92	8/15/89	68.1	ft Pos. Disp.	Contain	No	8 in							1	12 ft. 78 ft.
199-N-17	A4666		1/31/81	3/24/94	8/12/92	8/15/89	74.84	ft Subm.	Contain	No	8 in							1	12 ft. 83 ft.
199-N-21	A4671		1/31/81	1/30/93	8/13/92	4/25/91	70.66	ft Subm.	Purge to Ground	No	8 in							1	12 ft. 76 ft.
199-N-27	A4676		8/31/83	1/29/93	8/12/92	4/25/91	59.33	ft Subm.	Contain	No	8 in							1	32 ft. 69 ft.
199-N-75	A4718		7/1	3/92	7/1	4/94	8/23/93	-0.02	ft Pos. Disp.	Contain	No	4 in	4 in	64.4 ft	84.8 ft	SS	0.01 in		
199-N-76	A4719		5/5/92	7/21/94	8/23/93		75.79	ft Pos. Disp.	Contain	No	4 in	4 in	61 ft	81.4 ft	SS	0.01 in			
199-N-80	A	4720			8/23/93		73.64	ft Pos. Disp.	Contain	No	4 in	4 in	110.6 ft	120.6 ft	SS	0.005 in			
299-W1	1-30	A7289	4/15/92	7/23/97	2/5/93		258.81	ft Subm.	No		4 in	4 in	242 ft	279 ft	SS	0.01 in			
899-97-51A	A5362		10/4/93	4/13/92	1/20/92		19.56	ft Subm.	Contain	No	8 in	8 in	16 ft	39 ft	SS			1	12 ft. 39 ft.

A-30

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 2000

Quarter: 2

Quarter: 2			LAST				SCREEN				PERFORATION						
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	INSPEC.	DTW (PUMP TYPE)	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOY.	MTRL	S L O SIZE	In. TOP	BOT.
199-K-23	A4652		2/28/86	11/4/96	7/21/93	6/18/93	69.77 ft Pos. Disp.	Purge to Ground	No	8 in						1	65 ft. 60 ft.
199-K-106A	A9842		2/18/94			2/17/95	74.37 ft Pos. Disp.	Contain	Yes	4 in	4 in	70.06 ft	91.1 ft	SS	0.02 in		
199-K-107A	A9843		4/16/94			2/17/95	75.12 ft Pos. Disp.	Contain	No	4 in	4 in	71.63 ft	92.34 ft	SS	0.01 in		
199-K-108A	A9844		4/18/94			2/17/95	74.55 ft Pos. Disp.	Contain	No	4 in	4 in	69.35 ft	89.7 ft	SS	0.01 in		
199-K-109A	A9826		7/14/94	11/11/96		2/17/95	73.63 ft Pos. Disp.	Contain	Yes	4 in	4 in	69.6 ft	89.8 ft	SS	0.02 in		
199-K-110A	A9829		6/5/94	7/21/95		2/17/95	71.99 ft Pos. Disp.	Purge to Ground	No	4 in	4 in	68.65 ft	89.7 ft	SS	0.04 in		
199-K-111A	A9830		6/28/94	7/21/95		2/17/95	68.45 ft Pos. Disp.	Purge to Ground	No	4 in	4 in	64.66 ft	84.7 ft	SS	0.04 in		
199-N-2	A4669		6/30/84	10/21/96	4/19/93	4/26/91	72.73 ft Subm.	Contain	No							1	35 ft. 120 ft.
199-N-3	A4879		6/30/84	1/4/96	4/19/93	4/26/91	72 ft Subm.	Contain	No	8 in						1	34 ft. 95 ft.
199-N-32	A4681		9/30/83	11/29/93	4/5/93	4/25/91	72.45 ft Subm.	Contain	No	6 in	8 in	44 ft	80 ft	SS T			
199-N-50	A4693		7/24/85	11/29/93	12/28/92	1/9/92	77.73 ft Subm.	Purge to Ground	No	8 in	7 in	66 ft	86 ft	SS	0.02 in		
199-N-51	A4694		7/8/85	11/1/29/93	12/28/92	1/9/92	77.255 ft Subm.	Purge to Ground	No	8 in	7 in	66 ft	86 ft	SS	0.02 in		
199-N-81	A5443		4/20/93	9/8/95	9/8/95	4/18/95	73.98 ft Pos. Disp.	Contain	No	4 in	4 in	69.7 ft	89.8 ft	SS	0.02 in		
199-N-92A	A9878		10/31/94	4/10/95		4/4/95	10.46 ft No Pump	Contain	No	4 in	4 in	10.23 ft	30.28 ft	SS	0.01 in		
199-N-96A	A9862		10/24/94	4/10/95		4/4/95	50.83 ft Pos. Disp.	Purge to Ground	No	4 in	4 in	14.5 ft	34.5 ft	SS	0.01 in		
199-N-99A	A9910		9/28/94	4/10/95		4/4/95	12 ft Pos. Disp.	Contain	Yes	4 in	4 in	8.5 ft	28.5 ft	SS	0.01 in		
299-W15-31A	B2471		9/26/95	11/5/96			226.92 ft		Yes								
299-W19-34A	A9517		5/18/94			9/16/94	254.85 ft Pos. Disp.		No	4 in	6 in	324.2 ft	339.6 ft	SS	0.01 in		
299-W19-35	A9515		4/20/94			9/16/94	249.96 ft Pos. Disp.		No	4 in	6 in	70.01 ft	239.94 ft	SS	0.02 in		
299-W19-36	B2461		9/1/95	7/23/97			248.29 ft Subm.		No	8 in	8 in	244.8 ft	298.8 ft	SS	0.045 in		
299-W19-37	B2465		9/28/95	5/6/97			253.18 ft		No	4 in	4 in	243 ft	263 ft	SS	0.04 in		
299-W19-38	B2463		8/15/95	9/30/96			235.17 ft Subm.		No	4 in	4 in	38.71 ft	258.73 ft	SS	0.02 in		

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 2000

Quarter: 3

LAST			SCREEN			PERFORMANCE		
WELL NAME	WELL ID	PIEZO DATE	MAINT. ROUTINE	INSPEC. DTW	PUMP TYPE	WATER CONT.	RPT CASING DIA	TOP BOT.
199-D4-1	B2895	10/31/96	12/12/96	12/16/96	63.69 ft Pos. Disp.	Contain	10 in	6 in
199-D8-4	A4579	11/13/91	12/12/96	12/16/96	84.21 ft Pos. Disp.	Purge to Ground	3 in	3 in
199-D8-5	A4580	10/29/91	12/12/96	12/16/96	68.12 ft Pos. Disp.	Contain	3 in	3 in
199-D8-68	B2772	8/5/96	4/3/97		60.52 ft Subm.	Contain	6 in	6 in
199-D8-69	B2773	8/20/96	4/3/97		43.3 ft Subm.	Contain	6 in	6 in
199-D8-70	B2774	8/22/96	8/12/97		50.88 ft No Pump	Contain	6 in	6 in
199-D8-71	B2775	8/9/96			56.13 ft Subm.	Contain	6 in	6 in
199-H4-4	A4630	6/30/93	4/1/97	4/1/97	40.08 ft Pos. Disp.	Contain	6 in	6 in
199-H4-6	A4637	5/13/93	4/1/97	1/15/97	41.97 ft Pos. Disp.	Purge to Ground	6 in	6 in
199-H4-8	A4640	8/30/96	4/1/97	3/4/96	43 ft Pos. Disp.	Contain	4 in	6 in
199-H4-18	A4628	5/31/97	4/1/97	6/12/90	46.39 ft Pos. Disp.	Contain	6 in	6 in
199-H4-83	B2776	7/28/96	4/3/97		43.96 ft Subm.	Purge to Ground	6 in	6 in
199-H4-64	B2777	7/31/96	4/3/97		35.67 ft Subm.	Purge to Ground	6 in	6 in
199-K-112A	B2799	--	9/18/96	4/10/97	27.6 ft Subm.	Purge to Ground	6 in	6 in
199-K-114A	B2801	9/30/96	4/10/97		26.13 ft Subm.	Contain	6 in	6 in
199-K-117A	B2804	10/17/96			30.6 ft Subm.	Contain	10 in	6 in
299-W15-16	A4920	9/10/97	8/21/97	10/27/95	230.69 ft Pos. Disp.	No	4 in	4 in
299-W15-38	B2754	6/17/96			214.18 ft Subm.	Yes	4 in	4 in
299-W15-39	B2755	5/23/96	6/4/97		208.54 ft Subm.	Yes	4 in	4 in
299-W18-32	A5441	7/28/92			221.92 ft Pos. Disp.	No	4 in	4 in
299-W19-23	A7745	3/24/97	7/23/97	4/19/91	251.55 ft Subm.	No	5 in	5 in
299-W19-40	B2464	8/21/99	2/3/97		242.68 ft Subm.	No	4 in	4 in

ROUTINE WELL MAINTENANCE SCHEDULE

Program: CERCLA

Fiscal Year: 2000

Quarter: 4

Quarter: 4				LAST								SCREEN				PERFORATION			
WELL NAME	WELL ID	PIEZO	DRILL DATE	MAINT.	ROUTINE MAINT.	UNSPEC.	DTW	PUMP TYPE	WATER CONT. REQ.	RPT	CASING SIZE	DIAM	TOP	BOT.	MTRL	SLOT SIZE	INT.	TOP	BOT.
199-D3-2	B8074		9/2/97				77.4	Subm.	Purge to Ground	No		8 in	82.1 ft	102.1 ft	SS	0.02 in			
199-D4-13	B8071		9/2/97	12/5/97			78.78	Subm.	Contain	NO		6 in	71.8 ft	91.8 ft	SS	0.04 in			
199-D4-14	B8072		9/2/97	12/5/97			78.03	Subm.	Contain	NO		8 in	78.08 ft	98.12 ft	SS	0.02 in			
199-D4-15	B8073		9/2/97				78.08	Subm.	Contain	No		6 in	77.64 ft	97.64 ft	SS	0.04 in			
199-K-30	A4655		10/30/78	11/4/86	4/3/98	1/21/97	70.62 ft	Subm.	Purge to Ground	No	6 in	5 in	67 ft	87 ft	SS	0.01 in			
199-K-34	A4660		8/20/82	3/12/93	4/15/98	2/4/93	75.96 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	66.9 ft	86.9 ft	SS	0.01 in			
199-K-125A	B8559		8/10/98					Subm.			6 in	6 in	32 ft	72 ft	SS	.020 in			
199-N-74	A4717		8/22/91	2/18/94	5/21/98	6/23/93	68.44 ft	Pos. Disp.	Purge to Ground	No	4 in	4 in	59 ft	79.3 ft	SS	0.01 in			
209-W15-15	A4919		9/2/87	8/25/97	8/25/97	8/24/93	241.79 ft	Pos. Disp.		No	4 in	4 in	223 ft	253 ft	SS	0.03 in			
289-W18-21	A4933		7/29/87	1/19/98	3/20/98	8/24/93	212.37 ft	Pos. Disp.		No	4 in	4 in	195.5 ft	225.5 ft	SS	0.03 in			
289-W18-24	A4836		8/10/87	12/18/84	5/21/88	5/10/84	229.9 ft	Pos. Disp.		No	4 in	4 in	205.5 ft	235.5 ft	SS	0.03 in			

Permit Attachment 9

Permit Applicability Matrix

PART I									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
I.A.	EFFECT OF PERMIT								
I.A.1.		*	*	*	*	*	*	*	
I.A.2.		*	*	*	*	*	*	*	
I.A.3.		*	*		*	*	*	*	
I.A.4.	Coordination with the HFFACO		*		*	*	*	*	
I.B.	PERSONAL AND PROPERTY RIGHTS		*		*	*	*	*	
I.C.	PERMIT ACTIONS								
I.C.1.	Modification, Revocation, Reissuance, or Termination		*		*	*	*	*	
I.C.2.	Filing of a Request		*		*	*	*	*	
I.C.3.	Modifications		*		*	*	*	*	
I.D.	SEVERABILITY								
I.D.1.	Effect of Invalidation		*		*	*	*	*	
I.D.2.	Final Resolution		*		*	*	*	*	
I.E.	DUTIES AND REQUIREMENTS								
I.E.1.	Duty to Comply		*		*	*	*	*	
I.E.2.	Compliance Not Constituting Defense		*		*	*	*	*	
I.E.3.	Duty to Reapply		*		*	*	*	*	
I.E.4.	Permit Expiration & Continuation		*		*	*	*	*	
I.E.5.	Need to Halt or Reduce Activity Not a Defense		*		*	*	*	*	
I.E.6.	Duty to Mitigate		*		*	*	*	*	
I.E.7.	Proper Operation & Maintenance		*			*	*	*	
I.E.8.	Duty to Provide Information		*		*	*	*	*	
I.E.9.	Inspection & Entry		*		*	*	*	*	
I.E.10.	Monitoring & Records								
I.E.11.	Reporting Planned Changes		*			*	*	*	
I.E.12.	Certification of Construction or Modification		*				*		
I.E.13.	Anticipated Noncompliance		*		*	*	*	*	
I.E.14.	Transfer of Permits		*			*	*	*	
I.E.15.	Immediate Reporting		*		*	*	*	*	
I.E.16.	Written Reporting		*		*	*	*	*	
I.E.17.	Manifest Discrepancy Report								
I.E.17.a			*			*	*	*	
I.E.17.b			*		*	*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|--|
| A. Leased Land | E. TSD Unit Closures (in Part V) |
| B. North Slope and ALE | F. TSD Operating Units (in Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post-Closure/Modified Closure (in Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

* Condition applies to this category, as modified by applicable footnotes and qualifiers.

1 – For Category B, Part I Conditions only apply if future TSD activities are begun on the North Slope or ALE.

2 – For Category C, all Part I Conditions apply to activities subject to Conditions II.U. and II.V.

3 – For Category D, Part I Conditions only apply to activities subject to Conditions II.A., II.C., II.D.4., II.G., II.I., II.L.3., II.O., II.Q., II.S., II.T., II.X., and II.Y.

PART I									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
I.E.18.	Unmanifested Waste Report		*			*	*	*	
I.E.19.	Other Noncompliance		*		*	*	*	*	
I.E.20.	Other Information		*		*	*	*	*	
I.E.21.	Reports, Notifications, & Submissions		*		*	*	*	*	
I.E.22.	Annual Report		*		*	*	*	*	
I.F.	SIGNATORY REQUIREMENT		*		*	*	*	*	
I.G.	CONFIDENTIAL INFORMATION		*		*	*	*	*	
I.H.	DOCUMENTS TO BE MAINTAINED AT FACILITY SITE		*		*	*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|--|
| A. Leased Land | E. TSD Unit Closures (in Part V) |
| B. North Slope and ALE | F. TSD Operating Units (in Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post-Closure/Modified Closure (in Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

* Condition applies to this category, as modified by applicable footnotes and qualifiers.

1 – For Category B, Part I Conditions only apply if future TSD activities are begun on the North Slope or ALE.

2 – For Category C, all Part I Conditions apply to activities subject to Conditions II.U. and II.V.

3 – For Category D, Part I Conditions only apply to activities subject to Conditions II.A., II.C., II.D.4., II.G., II.I., II.L.3., II.O., II.Q., II.S., II.T., II.X., and II.Y.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.A.	FACILITY CONTINGENCY PLAN								
II.A.1.					*	*	*	*	For Category D, II.A Conditions only apply to releases of hazardous substances that threaten human health or the environment.
II.A.2.					*	*	*	*	
II.A.3.					*	*	*	*	
II.A.4.					*	*	*	*	
II.B.	PREPAREDNESS AND PREVENTION								
II.B.1.						*	*		
II.B.2.						*	*		
II.B.3.						*	*		
II.B.4.						*	*		
II.B.5.						*	*		
II.C.	PERSONNEL TRAINING								
II.C.1.						*	*	*	
II.C.2.					*	*	*	*	
II.C.3.						*	*	*	
II.C.4.					*	*	*	*	For Category D, Condition II.C.4 will not apply to unrestricted (publicly accessible) areas.
II.D.	WASTE ANALYSIS								
II.D.1.						*	*	*	
II.D.2.						*	*	*	
II.D.3.						*	*	*	
II.E.	QUALITY ASSURANCE/ QUALITY CONTROL								
II.E.1.						*	*	*	
II.E.2.						*	*	*	
II.F.	GROUND WATER AND VADOSE ZONE MONITORING					*	*	*	
II.F.1.	Purgewater Management					*	*	*	
II.F.2.	Well Remediation and Abandonment					*	*	*	
II.F.3.	Well Construction					*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|---|
| A. Leased Land | E. TSD Unit Closures (Part V) |
| B. North Slope and ALE | F. TSD Operating Units (Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post Closure/Modified Closure (Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.G.	SITING CRITERIA				*		*		For Category D, Condition II.G only applies if a new TSD unit is to be sited.
II.H.	RECORDKEEPING AND REPORTING					*	*	*	
II.I.	FACILITY OPERATING RECORD								For Category D, II.I Conditions only apply to activities subject to this Permit as defined by this matrix. For Category E, Condition applicability to be specified in Part V. Condition II.I only applies to existing records and records prepared after the date of Permit issuance.
II.I.1.		*	*		*	*	*	*	
II.I.1.a.		*	*		*	*	*	*	
II.I.1.b.							*	*	
II.I.1.c.					*	*	*	*	
II.I.1.d.						*	*	*	
II.I.1.e.			*		*				
II.I.1.f.					*	*	*	*	
II.I.1.g.						*	*	*	
II.I.1.h.	Reserved Condition								
II.I.1.i.	Reserved Condition								
II.I.1.j.						*	*	*	
II.I.1.k.					*	*	*	*	
II.I.1.l.	Reserved Condition								
II.I.1.m.						*	*	*	
II.I.1.n.					*	*	*	*	
II.I.1.o.	Reserved Condition								
II.I.1.p.			*		*	*	*	*	
II.I.1.q.			*		*	*	*	*	
II.I.1.r.					*	*	*	*	
II.I.1.s.					*	*	*	*	
II.I.1.t.					*	*	*	*	
II.J.	FACILITY CLOSURE								
II.J.1.						*	*	*	
II.J.2.						*	*	*	
II.J.3.						*	*	*	
II.J.4.						*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- A. Leased Land
- B. North Slope and ALE
- C. Interim Status TSD Units
- D. Areas Between TSDs (excluding A and B)

- E. TSD Unit Closures (Part V)
- F. TSD Operating Units (Part III)
- G. TSD Units in Post Closure/Modified Closure (Part VI)

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.K.	SOIL/GROUND WATER CLOSURE PERFORMANCE STANDARDS								
II.K.1.						*	*	*	
II.K.2.						*	*	*	
II.K.3.						*	*	*	
II.K.4.						*	*	*	
II.K.5.						*	*	*	
II.K.6.						*	*	*	
II.K.7.						*	*	*	
II.L.	DESIGN AND OPERATION OF FACILITY								
II.L.1.	Proper Design and Construction					*	*	*	
II.L.2.	Design Changes, Nonconformance and as-built Drawings					*	*	*	Condition II.L.2, applies to Categories E & G only if it is a landfill closure.
II.L.2.a.						*	*	*	
II.L.2.b.						*	*	*	
II.L.2.c.						*	*	*	
II.L.2.d.						*	*	*	
II.L.2.e.	Facility Compliance				*	*	*	*	
II.M.	SECURITY					*	*	*	
II.N.	RECEIPT OF DANGEROUS WASTES GENERATED OFF-SITE								
II.N.1.	Receipt of Off-Site Waste						*		
II.N.2.	Waste From Sources Outside the U.S.						*		
II.N.3.	Notice to Generator						*		
II.O.	GENERAL INSPECTION REQUIREMENTS								
II.O.1.					*	*	*	*	
II.O.1.a.					*				
II.O.1.b.					*				
II.O.1.c.					*				
II.O.1.d.					*				
II.O.2.					*	*	*	*	
II.O.3.					*	*	*	*	
II.P.	MANIFEST SYSTEM								
II.P.1.						*	*	*	
II.P.2.						*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|---|
| A. Leased Land | E. TSD Unit Closures (Part V) |
| B. North Slope and ALE | F. TSD Operating Units (Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post Closure/Modified Closure (Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.Q.	ON-SITE TRANSPORTATION								
II.Q.1.					*	*	*	*	
II.Q.2.					*	*	*	*	
II.R.	EQUIVALENT MATERIALS								
II.R.1.						*	*	*	
II.R.2.						*	*	*	
II.R.3.						*	*	*	
II.S.	LAND DISPOSAL RESTRICTIONS				*	*	*	*	
II.T.	ACCESS AND INFORMATION				*	*	*	*	
II.U.	MAPPING OF UNDERGROUND PIPING								
II.U.1.	Reserved Condition								
II.U.2.	Reserved Condition								
II.U.3.				*		*	*	*	
II.U.4.				*		*	*	*	
II.V.	MARKING OF UNDERGROUND PIPING			*		*	*	*	
II.W.	OTHER PERMITS AND/OR APPROVALS								
II.W.1.						*	*	*	
II.W.2.						*	*	*	
II.W.3.						*	*	*	
II.X.	SCHEDULE EXTENSIONS								Condition II.X, only applies to Category C if activities are subject to Conditions II.U, and II.V. Condition II.X, only applies to Category D if activities are subject to this Permit as defined by this matrix.
II.X.1.				*	*	*	*	*	
II.X.2.				*	*	*	*	*	
II.Y.	CORRECTIVE ACTION	*	*	*	*	*	*	*	
II.Y.1.	Compliance with Chapter 173-340 WAC	*	*	*	*	*	*	*	
II.Y.1.a.		*	*	*	*	*	*	*	
II.Y.1.b.		*	*	*	*	*	*	*	
II.Y.1.c.		*	*	*	*	*	*	*	
II.Y.1.d.		*	*	*	*	*	*	*	
II.Y.1.e.		*	*	*	*	*	*	*	
II.Y.1.f.		*	*	*	*	*	*	*	
II.Y.1.g.		*	*	*	*	*	*	*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|---|
| A. Leased Land | E. TSD Unit Closures (Part V) |
| B. North Slope and ALE | F. TSD Operating Units (Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post Closure/Modified Closure (Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART II									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
II.Y.2.	Acceptance of Work Under Other Authorities or Programs and Integration with the FFACO	*	*	*	*	*	*	*	
II.Y.2.a.		*	*	*	*	*	*	*	
II.Y.2.b.		*	*	*	*	*	*	*	
II.Y.2.c.		*	*	*	*	*	*	*	
II.Y.2.d.		*	*	*	*	*	*	*	
II.Y.3.	Releases of Dangerous Waste or Dangerous Constituents Not Covered by the FFACO	*	*	*	*	*	*	*	
II.Y.3.a.	U.S. Ecology	*	*	*	*	*	*	*	
II.Y.3.b.	Newly Identified Solid Waste Management Units and Newly Identified Releases of Dangerous Waste or Dangerous Waste Constituents	*	*	*	*	*	*	*	
II.Z	WASTE MINIMIZATION								
II.Z.1							*		
II.Z.1.a							*		
II.Z.1.b							*		
II.Z.2							*		
II.AA	AIR EMISSION STANDARDS FOR PROCESS VENTS						*		
II.BB	AIR EMISSION STANDARDS FOR EQUIPMENT LEAKS						*		
II.CC	AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS						*		

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|---|
| A. Leased Land | E. TSD Unit Closures (Part V) |
| B. North Slope and ALE | F. TSD Operating Units (Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post Closure/Modified Closure (Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

PART III									
CONDITION		CATEGORY							QUALIFIERS
PART	TITLE	A	B	C	D	E	F	G	
III.	UNIT SPECIFIC CONDITIONS FOR FINAL STATUS OPERATIONS								
III.2	PUREX Storage Tunnels						*		
III.3	Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility						*		
III.4	242-A Evaporator						*		
III.5	325 Hazardous Waste Treatment Units						*		
III.10	Waste Treatment and Immobilization Plant						*		
III.11	Integrated Disposal Facility						*		
III.15	331-C Storage Unit						*		
III.16	400 Area Waste Management Unit						*		
PART IV									
IV.	UNIT SPECIFIC CONDITIONS FOR CORRECTIVE ACTION								
IV.1	100-NR-1				*	*			
PART V									
V.	UNIT SPECIFIC CONDITIONS FOR UNITS UNDERGOING CLOSURE								
V.1	1325-N Liquid Waste Disposal Facility					*			
V.2	1301-N Liquid Waste Disposal Facility					*			
V.3	1324-N Surface Impoundment & 1324-NA Surface Impoundment					*			
PART VI									
VI.	UNIT SPECIFIC CONDITIONS FOR UNITS IN POST CLOSURE								
VI.1	300 Area Process Trenches							*	
VI.2	183-H Solar Evaporation Basins							*	

CATEGORIES ARE DEFINED AS FOLLOWS:

- | | |
|---|---|
| A. Leased Land | E. TSD Unit Closures (Part V) |
| B. North Slope and ALE | F. TSD Operating Units (Part III) |
| C. Interim Status TSD Units | G. TSD Units in Post Closure/Modified Closure (Part VI) |
| D. Areas Between TSDs (excluding A and B) | |

*Condition applies to this category, as modified by applicable footnotes and qualifiers.

Permit Attachment 10 Strategy for Handling and Disposing of Purgewater (July 1990)

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Permit Attachment 10:
Strategy for Handling and Disposing of Purgewater at the Hanford Site (July 1990)

B PURPOSE AND OBJECTIVES

B.1 The purpose of this document:

- B.1.1 Describe the strategy for managing purgewater at the Hanford Site, Washington.
- B.1.2 Describe purgewater collection criteria for groundwater monitoring wells on the Hanford Site, Washington.
- B.1.3 Describe an implementation plan for demonstrating facility compliance in collecting, storing, handling, and disposing of purgewater on the Hanford Site, Washington.
- B.1.4 Set forth by written agreement the requirements for the management of purgewater on the Hanford Site, Washington.

B.2 The objectives of the strategy

- B.2.1 Continue with existing groundwater monitoring activities and proceed with new groundwater monitoring well installation pursuant to the requirements of: (1) the State of Washington Hazardous Waste Management Act of 1976 (Revised Code of Washington [RCW] 70.105) and Washington Administrative Code (WAC) 173-303, (2) the *Resource Conservation and Recovery Act of 1976 (RCRA)*", (3) the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)*, and (4) the *Atomic Energy Act of 1954* as amended (AEA).
- B.2.2 Comply with milestones set forth In the Hanford Federal Facility Agreement and Consent Order (Informally referred to as the Tri-Party Agreement) for groundwater monitoring.
- B.2.3 Provide an acceptable level of environmental protection.

C BACKGROUND

C.1 Statement of the Problem

- C.1.1 Monitoring of groundwater for radioactive and chemical constituents at the Hanford Site is required by the U.S. Department of Energy-Richland Operations Office (DOE-RL), the Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA). Groundwater is withdrawn from wells for: (1) developing newly constructed groundwater monitoring wells, (2) purging of existing wells prior to sample collection, (3) aquifer testing and (4) periodic cleaning and renovating of existing monitoring wells.
- C.1.2 For purposes of this strategy, all groundwater extracted from the aquifer pursuant to actions one through four described in paragraph 2.1.1 above shall be defined as purgewater.
- C.1.3 Portions of the uppermost-unconfined aquifer underlying the Hanford Site are being extensively monitored due to elevated concentrations of various chemical and radionuclide constituents. When contaminated purgewater is generated, it shall be classified as containing newly generated solid waste and shall be subject to hazardous waste designation as described in Sections 2.1.4 and 3.6 of this strategy. However, for purposes of clarification and compliance with RCW 70.105, water contained in the aquifer shall not be considered a solid waste.
- C.1.4 To protect public health and safety and protect the environment from the improper disposal or management of purgewater, DOE-RL will manage purgewater on the Hanford Site as agreed to in this document.

C.2 Impact on Programs

C.2.1 Groundwater well installation projects and monitoring programs at Hanford are impacted by the current Hanford Site capacity to store, treat, and dispose of purgewater in accordance with regulatory requirements of dangerous waste management as promulgated in WAC 173-303. RCRA and operable unit specific projects and programs were instituted for compliance with the Tri-Party Agreement. However, no milestones for defining treatment or disposal criteria for purgewater are set forth in that agreement. Consequently, until approved industrial technologies are available for treatment of contaminated purgewater containing chemical constituents and radionuclides above agreed to collection criteria, purgewater will be stored on the Hanford Site in accordance with this agreement.

C.2.2 The large volume of purgewater generated during aquifer testing presents logistical handling, transportation, and storage problems. However, the generation of aquifer test purgewater is necessary to determine physical characteristics of the Hanford Site hydrology. Therefore, it is herein agreed that aquifer testing will be performed in a manner consistent with the items listed below: (1) in geographical areas on the Hanford Site where constituent concentrations are lower than the health or environmental-based criteria shown in Tables I and 3 of this document as determined by data from adjacent wells and/or initial well development samples. aquifer test purgewater may be discharged to the ground and prior approval by Ecology is not required (2) Aquifer testing may be performed at the discretion of DOE-RL in any area, without prior Ecology approval, if the resulting purgewater is collected and stored for treatment as required by this strategy (3) Aquifer testing performed as part of an approved past practice work plan. RCRA assessment or closure plan will be performed in accordance with section 3.2.5 of this strategy; (4) In selected cases it may be determined that-the benefits of performing pump tests in contaminated areas, that require too large a quantity of purgewater to reasonably contain (and hence may require alternate purgewater management) maybe justified. In this case, Section 3.7 of this strategy will be invoked.

D PURGEWATER MANAGEMENT CRITERIA

Existing federal and state regulations and policy guidance are incenerminate regarding specific disposal criteria or standards for the handling and management of purgewater. Unmanaged disposal of purgewater containing significant quantities of hazardous and/or radioactive liquids to the soil could potentially allow these substances to accumulate and create additional contaminated sites requiring remediation. Collection, storage, treatment, and disposal of purgewater creates additional management and environmental concerns. At present, effective treatment, methods have not been developed for all of the hazardous and radioactive substances and combinations of mixed wastes that may occur in Hanford groundwater. Treatment of very low concentration contaminated water is in many instances ineffectual. Therefore, a balanced approach to purgewater management is needed. The objective of this strategy is to provide an acceptable level of health, and environmental protection by minimizing the impact of soil discharge of contaminated purgewater. This is accomplished by requiring the collection of purgewater with levels of hazardous and radioactive constituents above an agreed-to health and environmental based criteria for potential future treatment and disposal. The result is a cost effective, environmentally justifiable program. Effective use of federal funds will result in a greater environmental return per dollar spent as these dollars can be allotted to more serious environmental and health risk problems. Collection of all purgewater is not necessary due to the minimal health and environmental risk incurred in discharging these contaminants to the ground. Purgewater that may be discharged to the ground without treatment under this strategy is of relatively low concentration and volume, and is managed to minimize the accumulation of contamination and to reduce the potential of driving any existing contaminants further into the soil. The fact that the Hanford Site is in an arid environment with minimal recharge reinforces this approach.

To clarify these issues, DOE-RL, Ecology, and EPA herein agree to the following purgewater management criteria for implementation at the Hanford Site, Washington. The effectiveness of this program will be evaluated by the three parties over the next year, incorporating changes as appropriate.

D.1 Collection Criteria

D.1.1 Purgewater from Hanford Site monitoring wells will be managed in accordance with health and environmental based criteria. Purgewater collection criteria will be based on 10 times Maximum Contaminant levels (10X MCLs) for drinking water or 10 times EPA's Chronic Freshwater Toxicity levels (CFWTLs)(10X CFWTLs), or 10 times the Practical Quantitation limit (PQLs) of SW 846 for Table 1 constituents; with the application of the most "restrictive criteria for designation of purgewater requiring collection. Use of EPA's designation of CFWTLs is included in this strategy as environmental-based criteria as a result of the protection afforded to freshwater biota. The radionuclide standards are based on 10X the MCLs referenced in National Interim Primary Drinking Water Regulations (see also 40CFR141.16(b) dated July 1, 1989) except for uranium and plutonium standards which are based on ten times (10X) one twenty fifth Derived Concentration Guides as defined in DOE Order 5400.5. Tritium is not included in purgewater determinations because effective treatment technology has not been demonstrated. Disposal to the soil is a less hazardous pathway to biota than storing tritium-contaminated water above ground, which would involve a larger airborne pathway. Table 1 to this agreement is a listing of the most restrictive of the applicable standards, which are the collection criteria for radionuclide's and chemical constituents.

D.1.2 Chemical analyses used to determine the presence and concentration of constituents for RCRA wells are those analytical techniques and detection limits used for RCRA groundwater monitoring, Test Method for Evaluating Solid Waste--Physical/Chemical Methods, SW-846, Rev. 3. Chemical analyses used to determine the presence and concentration of constituents for Past Practice investigations are defined in the approved Work Plan or approved pre-work plan document. To qualify as a contaminant, the concentration of the constituent must be above naturally occurring levels. DOE-RL shall demonstrate groundwater constituent background levels, which shall be subject to approval by Ecology and EPA. No additional analyses, other than those normally used for monitoring purposes, will be conducted in order to determine the collection category of the purgewater.

D.1.3 DOE-RL will collect purgewater that contains radionuclides that exceed ten times (10X) MCLs for specific isotopes listed by the EPA. Tritium is excluded from collection.

D.1.4 Purgewater across the Hanford Site will be collected and stored for future treatment when the concentration of constituents exceeds collection criteria listed in Table 1.

D.1.5 Purgewater collection criteria for specific constituents may be modified based on analytical detection levels, background concentrations, treatability, or other factors mutually acceptable to all parties to this agreement.

D.1.6 Purgewater collection criteria for the following chemical constituents will be the analytical detection limits as listed in EPA Method SW-B46. Table 1 specifies EPA Method SW-B46 collection criteria for these compounds because existing detection limits exceed CFWTL.

- (i) DOE
- (ii) DDT
- (iii) Dieldrin
- (iv) Dioxin
- (v) Endrin
- (vi) Heptachlor
- (vii) Hexachlorobenzene
- (viii) Isobutyl Alcohol

- (ix) Parathion
- (x) Silver
- (xi) Toxaphene

D.1.7 Non-chemical contaminants and physical characteristics of purgewater (e.g., alkalinity, turbidity, color, total dissolved solids, and coliform bacteria) will not be used as collection criteria.

D.1.8 Collection criteria will be based upon filtered metal analyses. Unfiltered metal analyses may misrepresent constituent levels present in purgewater, which may be the result of sediment, wearing of drill bits, and oxidation residues on the well casings.

D.1.9 Because of historical DOE-RL requirements, groundwater monitoring sample analyses at Hanford are based on constituent lists that do not conform to chemical constituents listed in the CFWTL. Therefore, chemical compounds with no history of analyses at Hanford will be removed from consideration as collection criteria (see Table 2). No additional analyses, other than those normally used for groundwater monitoring purposes, will be performed in order to determine the collection category of the purgewater.

D.1.10 DOE-RL will submit to Ecology and EPA a list of chemical constituents present in Hanford groundwater in excess of the 10X criteria by October 1, 1990. This list will be used to determine which wells will be excluded from the 10X collection criteria, based on their natural occurrence in the Hanford Site groundwater.

D.1.11 Assignment of wells into collection categories will be performed on the basis of existing groundwater analytical data. Where existing data are insufficient to assign a well to a collection category, the chemical and radiological composition of an adjacent well may be used as indicator wells to establish purgewater disposition. If adjacent wells are also inadequate (or do not exist) to determine disposition, approved indicator parameters will be identified and analyses performed that can be used to establish a collection category. Wherever possible, the analyses performed for determination of purgewater disposition will be limited. Indicator parameters and adjacent indicator wells will be agreed upon by all parties. RCRA or Past Practice Operable Unit Manager Meeting Minutes will be the approval record. Decisions involving the site-wide monitoring program will be made through representation of DOE-RL by the Safety and Environment Division (SED) in these meetings.

D.1.12 Because of the laterally extensive plume of carbon tetrachloride beneath the 200 West Area, all purgewater from 200 West Area, except for the expansion area will be collected and stored.

D.1.13 Table 4 lists wells requiring collection as determined by the data available in June 1990. This list will be subject to change as new data becomes available.

D.2 Management Practices

D.2.1 The collection criteria will be applicable to all wells on the Hanford Site.

D.2.2 Purgewater containing constituents in concentrations lower than the collection criteria can be discharged to the soil at or in the immediate vicinity of the wellhead when such wells do not monitor the following:

- (i) designated RCRA Solid Waste Management Units (SWMUs)
- (ii) burial grounds
- (iii) active/inactive liquid effluent disposal sites
- (iv) known surface or subsurface soil contamination areas.

Purgewater from wells in the areas cited above will be taken to other areas on the site and discharged directly to the soil or to B-Pond.

D.2.3 Purgewater containing constituents in excess of the collection criteria will be collected and stored in ModuTanks™ located in the 600 area immediately east of the 200 East Area.

D.2.4 Based upon the list of major contaminants to be used for the collection and evaluation of purgewater, DOE-RL will identify a range of treatment and disposal options for purgewater collected pursuant to Paragraph 3.2.3 of this strategy. From these options, DOE-RL will propose the preferred method, which will consider both the environmental protection offered and the cost effectiveness of the option. Ecology and the EPA will concur in the selection of the final treatment and disposal selection. DOE-RL agrees to resume aquifer pump testing as required in approved Past Practice Work Plans, RCRA Assessment, or Closure Plans. Nomination of wells for aquifer testing for these purposes will be made by DOE-RL and will be initially focused on existing wells having constituent concentrations less than the collection criteria. Final approval of wells to be used in aquifer testing for these purposes and disposition of the purgewater will be approved by Ecology and EPA.

D.3 Disposal Categories

D.3.1 Sample analyses from previous sampling events (usually quarterly) will be used to determine the disposal category for purgewater from wells in the monitoring mode.

D.3.2 Additional analyses to determine purgewater disposition will only be performed if the disposition of purgewater cannot be established through existing data or indicator wells adjacent to the well in question. If additional analysis is needed to determine disposition, approved indicator parameters, based on substances of concern in adjacent wells, or near related or adjacent facilities will be used to determine the need for collection.

D.4 Treatment

D.4.1 DOE-RL shall actively pursue treatment technology that will reduce concentrations of contaminants in radioactive liquid effluents rendering them acceptable for discharge to the environment liquid effluent treatment systems currently being designed for the Hanford Site will be evaluated for the inclusion of purgewater in the treatment 3.4.2 process. If it is determined to be technically feasible, treatment of purgewater collected under Paragraph 3.2.3 of this strategy will be conducted in accordance with terms and conditions specified in an applicable treatment facility liquid effluent disposal permit.

D.4.2 Purgewater requiring collection and storage in the ModuTanks in the 600 area will be treated prior to discharge to soil or surface waters on the Hanford Site.

D.5 Permitting Strategy

D.5.1 The regulatory implementation mechanism for this purgewater management strategy will be through inclusion as Appendix F to the Action Plan of the Hanford Federal Facility and Consent Order (Tri-Party Agreement). DOE-RL, Ecology and EPA also agree that requirements contained in the strategy will be included in the Hanford Site RCRA Permit issued by Ecology. The strategy will also be included by reference into past practice work plans. The site-wide monitoring network is maintained for compliance with DOE Order 5400.1; however, purgewater associated with this program will be managed under the terms of this strategy.

D.6 Regulatory Provisions

D.6.1 All purgewater requiring collection and storage will be managed in compliance with the provisions of applicable permits and consistent with RCRA and WAC regulations for the Treatment, Storage, and Disposal of hazardous/dangerous waste. However, no designation as to the specific source of the waste (i.e., listed waste) will apply.

D.6.2 In accordance with regulatory definition, purgewater is a dangerous waste when it exhibits the characteristics of dangerous waste (i.e., ignitability, corrosivity, reactivity, and extraction

procedure toxicity), or as determined by designation or bioassay pursuant to the Washington State Administrative Code (WAC), Dangerous Waste Regulations, 173.303.

In signing this purgewater management strategy, Ecology agrees that purgewater management at Hanford is not subject to the groundwater listed waste designation procedures as set forth in WAC Chapter 173.303.

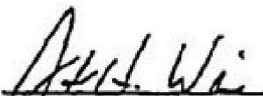
D.7 Special Circumstances

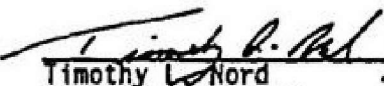
D.7.1 RCRA and CERCLA Unit Managers designated by the respective Tri-Party Agreement participants (DOE-RL, Ecology and EPA) and SED shall have authority to negotiate unique purgewater disposal criteria not specified in this strategy. Any negotiations conducted outside of the scope of this strategy will only be conducted for unusual situations where unique application of the existing strategy is impractical.

D.7.2 Prior to the implementation of any special purgewater management actions negotiated by Unit Managers or SED, they will prepare a jointly signed decision paper specifying the technical and regulatory justifications for their actions for submittal to the Tri-Party Agreement Project Managers for approval.

D.7.3 The provisions of this strategy shall be reviewed annually by the signatory parties or their designees for purposes of amending the document if it is deemed necessary. If there is a significant need by any of the signatory parties for revision at any time, the strategy may be revised and approved by them.

3.8 It is the express intent of all parties that full implementation of this strategy will occur by October 1, 1990. Until such time as this purgewater management agreement is approved and signed by DOE-RL, Ecology, and EPA, DOE-RL will continue to manage purgewater as previously agreed to with Ecology and the EPA.

 7/18/90
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Hanford Project Manager
U.S. Department of Energy
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 7/21/90
Timothy L. Nord
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State of Washington
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Paul T. Day
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Hanford Project Office

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
1,1,1,2-tetrachlorethane	10.0	50.0	PPB	PQL
1,1,1-trichloroethane	5.0	2000.0	PPB	MCL
1,1,2,2-tetrachloroethane	5.0	24000.0	PPB	CFWTL
1,1,2-trichloroethane	5.0	2000.0	PPB	MCL ²
1,1-dichloroethane	5.0	10.0	PPB	PQL
1,1-dichloroethylene	10.0	70.0	PPB	MCL
1,2,3,4-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3,5-tetrachlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,2,3-trichloropropane	10.0	50.0	PPB	PQL
1,2,4,5-tetrachlorobenzene	10.0	100.0	PPB	PQL
1,2,4-trichlorobenzene	10.0	100.0	PPB	PQL
1,2-dibromo-3-chloropropane	10.0	50.0	PPB	PQL
1,2-dibromoethane	10.0	50.0	PPB	PQL
1,2-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,2-dichloroethane	5.0	50.0	PPB	MCL
1,2-dichloropropane	5.0	57000.0	PPB	CFWTL
1,3,5-trichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichlorobenzene	10.0	500.0	PPB	CFWTL
1,3-dichloropropene	5.0	2440.0	PPB	CFWTL
1,4-dichloro-2-butene	10.0	50.0	PPB	PQL
1,4-naphthoquinone	10.0	100.0	PPB	PQL
1-naphthylamine	10.0	100.0	PPB	PQL
2,3,4,6-tetrachlorophenol	10.0	100.0	PPB	PQL
2,4,5-T	2.0	20.0	PPB	PQL
2,4,5-TP silvex	2.0	100.0	PPB	MCL
2,4,5-trichlorophenol	10.0	100.0	PPB	PQL
2,4,6-trichlorophenol	10.0	9700.0	PPB	CFWTL
2,4-D	2.0	1000.0	PPB	MCL
2,4-dichlorophenol	10.0	3650.0	PPB	CFWTL
2,4-dimethylphenol	10.0	50.0	PPB	PQL
2,4-dinitrophenol	10.0	500.0	PPB	PQL
2,4-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2,6-dichlorophenol	10.0	100.0	PPB	PQL
2,6-dinitrotoluene	10.0	2300.0	PPB	CFWTL
2-Hexanone	50.0	500.0	PPB	PQL
2-Methylnaphthalene	10.0	100.0	PPB	PQL
2-acetylaminofluorene	10.0	100.0	PPB	PQL
2-chloronaphthalene	10.0	100.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
2-chlorophenol	10.0	20000.0	PPB	CFWTL
2-naphthylamine	10.0	100.0	PPB	PQL
2-picoline	10.0	50.0	PPB	PQL
3,3'-dichlorobenzidine	10.0	200.0	PPB	PQL
3,3'-dimethylbenzidine	10.0	100.0	PPB	PQL
3-methylcholanthrene	10.0	100.0	PPB	PQL
4,6-dinitro-o-cresol and salts	10.0	500.0	PPB	PQL
4-Nitroquinoline 1-oxide	10.0	100.0	PPB	PQL
4-aminobiphenyl	10.0	100.0	PPB	PQL
4-bromophenyl phenyl ether	10.0	100.0	PPB	PQL
5-nitro-o-toluidine	10.0	100.0	PPB	PQL
7,12-dimethylbenz[a]anthracene	10.0	100.0	PPB	PQL
Acenaphthalene	10.0	100.0	PPB	PQL
Acenaphthene	10.0	5200.0	PPB	CFWTL
Acetone	10.0	1000.0	PPB	PQL
Acetonitrile	10.0	1000.0	PPB	PQL
Acetophenone	10.0	100.0	PPB	PQL
Acrolein	10.0	210.0	PPB	CFWTL
Acrylonitrile	10.0	26000.0	PPB	CFWTL
Aldrin	.1	.5	PPB	PQL
Allyl Chloride	100.0	100.0	PPB	PQL ³
Alpha,alpha-dimethylphenethyla	10.0	100.0	PPB	PQL
Alpha-BHC	.1	.5	PPB	PQL
Aniline	10.0	100.0	PPB	PQL
Anthracene	10.0	100.0	PPB	PQL
Antimony, filtered	100.0	16000.0	PPB	CFWTL
Antimony-125	48.0	3000.0	pCi/L	MCL
Aramite	10.0	100.0	PPB	CFWTL
Arochlor 1016	1.0	1.0	PPB	CFWTL ³
Arochlor 1221	1.0	1.0	PPB	CFWTL ³
Arochlor 1232	1.0	1.0	PPB	CFWTL ³
Arochlor 1242	1.0	1.0	PPB	CFWTL ³
Arochlor 1248	1.0	1.0	PPB	CFWTL ³
Arochlor 1254	1.0	1.0	PPB	CFWTL ³
Arochlor 1260	1.0	1.0	PPB	CFWTL ³
Arsenic, filtered	5.0	480.0	PPB	CFWTL
Barium, filtered	6.0	10000.0	PPB	MCL
Benz[a]anthracene	10.0	100.0	PPB	PQL
Benzene	5.0	50.0	PPB	MCL
Benzo(ghi)perylene	10.0	100.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
Benzo(k)fluoranthene	10.0	100.0	PPB	PQL
Benzo[a]pyrene	10.0	190.0	PPB	PQL
Benzo[b]fluoranthene	10.0	100.0	PPB	PQL
Benzyl Alcohol	10.0	200.0	PPB	PQL
Beryllium, filtered	5.0	53.0	PPB	CFWTL
Beta-BHC	.1	.5	PPB	PQL
Bis(1-chloro-1-methylethyl)ether	10.0	100.0	PPB	PQL
Bis(2-chloroethoxy) methane	10.0	100.0	PPB	PQL
Bis(2-chloroethyl) ether	10.0	100.0	PPB	PQL
Bis(chloromethyl)ether	5.0	100.0	PPB	PQL
Bromodichloromethane	5.0	10.0	PPB	PQL
Bromoform	5.0	20.0	PPB	PQL
Cadmium, filtered	2.0	11.0	PPB	CFWTL
Carbon disulfide	10.0	50.0	PPB	PQL
Carbon tetrachloride	5.0	50.0	PPB	MCL
Carbon-14	20.0	20000.0	pCi/L	MCL
Cesium-137	20.0	2000.0	pCi/L	MCL
Chlordane	1.0	1.0	PPB	CFWTL ³
Chloride	500.0	2500000.0	PPB	MCL
Chlorobenzene	5.0	20.0	PPB	PQL
Chlorobenzene (by ABN)	10.0	20.0	PPB	PQL
Chlorobenzilate	300.0	300.0	PPB	PQL ³
Chloroethane	10.0	50.0	PPB	PQL
Chloroform	5.0	1000.0	PPB	MCL
Chromium(VI)	50.0	110.0	PPB	CFWTL
Chromium, filtered	10.0	110.0	PPB	CFWTL ⁴
Chrysene	10.0	100.0	PPB	PQL
Cobalt-60	22.5	1000.0	pCi/L	MCL
Copper, filtered	10.0	120.0	PPB	CFWTL
Cresols	10.0	100.0	PPB	PQL
Cyanide	10.0	52.0	PPB	CFWTL
DDD	.1	1.0	PPB	PQL
DDE	.1	0.5	PPB	PQL
DDT	.1	.1	PPB	CFWTL ³
Delta-BHC	.1	1.0	PPB	PQL
Di-n-propylnitrosamine	10.0	100.0	PPB	PQL
Dibenz[a,h]anthracene	10.0	100.0	PPB	PQL
Dibenzofuran	10.0	100.0	PPB	PQL
Dibromochloromethane	5.0	10.0	PPB	PQL
Dichlorodifluoromethane	10.0	50.0	PPB	PQL

Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
Dieldrin	.1	.1	PPB	CFWTL ³
Dillate	10.0	100.0	PPB	PQL
Dimethoate	2.0	100.0	PPB	PQL
Dinitrobenzene	10.0	100.0	PPB	PQL
Dinoseb	10.0	10.0	PPB	PQL
Dioxane	500.0	1500.0	PPB	PQL
Dioxin	.1	.1	PPB	CFWTL ³
Diphenylamine	10.0	100.0	PPB	PQL
Disulfoton	2.0	20.0	PPB	PQL
Endosulfan I	.1	.6	PPB	CFWTL
Endrin	.1	.1	PPB	CFWTL ³
Ethyl benzene	5.0	20.0	PPB	PQL
Ethyl methacrylate	10.0	50.0	PPB	PQL
Ethyl methanesulfonate	10.0	100.0	PPB	PQL
Fluoranthene	10.0	100.0	PPB	PQL
Fluorene	10.0	100.0	PPB	PQL
Fluoride	500.0	20000.0	PPB	MCL
Gross alpha	4.0	150.0	pCi/L	MCL
Gross beta	8.0	500.0	pCi/L	MCL
Heptachlor	.1	.1	PPB	CFWTL ³
Heptachlor epoxide	.1	10.0	PPB	PQL
Hexachlorobenzene	10.0	10.0	PPB	PQL ³
Hexachlorobutadiene	10.0	93.0	PPB	CFWTL
Hexachlorocyclopentadiene	10.0	52.0	PPB	CFWTL
Hexachloroethane	10.0	5400.0	PPB	CFWTL
Hexachlorophene	10.0	100.0	PPB	PQL
Hexachloropropene	10.0	100.0	PPB	PQL
Hydrogen sulfide	10.0	20.0	PPB	CFWTL
Indeno(1,2,3-cd)pyrene	10.0	100.0	PPB	PQL
Iodine-129	1.0	10.0	pCi/L	MCL
Iodine-131	20.0	30.0	pCi/L	MCL
Iodomethane	10.0	50.0	PPB	PQL
Iron, filtered	30.0	3000.0	PPB	MCL
Isobutyl Alcohol	10000.0	10000.0	PPB	PQL ³
Isodrin	10.0	100.0	PPB	PQL
Isophorone	10.0	100.0	PPB	PQL
Isosafrole	10.0	100.0	PPB	PQL
Kepone	1.0	100.0	PPB	PQL
Lead, filtered	5.0	32.0	PPB	CFWTL
Lindane, gamma-BHC	.1	.8	PPB	CFWTL

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Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
Manganese, filtered	5.0	500.0	PPB	MCL
Mercury, filtered	.1	.1	PPB	CFWTL
Methacrylonitrile	10.0	50.0	PPB	PQL
Methapyrilene	10.0	100.0	PPB	PQL
Methoxychlor	3.0	3.0	PPB	CFWTL ³
Methyl bromide	10.0	100.0	PPB	PQL
Methyl chloride	10.0	10.0	PPB	PQL
Methyl ethyl ketone	10.0	100.0	PPB	PQL
Methyl isobutyl ketone	10.0	50.0	PPB	PQL
Methyl methacrylate	10.0	20.0	PPB	PQL
Methyl methanesulfonate	10.0	100.0	PPB	PQL
Methyl parathion	2.0	5.0	PPB	PQL
N-Nitrosodiphenylamine	10.0	100.0	PPB	PQL
N-nitrosodi-n-butylamine	10.0	100.0	PPB	PQL
N-nitrosodiethylamine	10.0	100.0	PPB	PQL
N-nitrosodimethylamine	10.0	100.0	PPB	PQL
N-nitrosomethylethylamine	10.0	100.0	PPB	PQL
N-nitrosomorpholine	10.0	100.0	PPB	PQL
N-nitrosopiperidine	10.0	100.0	PPB	PQL
Naphthalene	10.0	6200.0	PPB	CFWTL
Nickel, filtered	10.0	1600.0	PPB	CFWTL
Nickel-63	10.0	500.0	pCi/L	MCL
Nitrate	500.0	450000.0	PPB	MCL
Nitrobenzene	10.0	100.0	PPB	PQL
Nitrosopyrrolidine	10.0	100.0	PPB	PQL
O,O,O-triethyl phosphorothioate	10.0	100.0	PPB	PQL
O-toluidine hydrochloride	10.0	100.0	PPB	PQL
P-chloro-m-cresol	10.0	50.0	PPB	PQL
P-chloroaniline	10.0	200.0	PPB	PQL
P-dimethylaminoazobenzene	10.0	100.0	PPB	PQL
P-nitroaniline	10.0	500.0	PPB	PQL
Parathion	2.0	2.0	PPB	CFWTL ³
Pcdd's	.0	.1	PPB	PQL
Pcdf's	.0	.1	PPB	PQL
Pentachlorobenzene	10.0	100.0	PPB	PQL
Pentachloroethane	10.0	11000.0	PPB	CFWTL
Pentachloronitrobenzene	10.0	100.0	PPB	PQL
Pentachlorophenol	50.0	130.0	PPB	CFWTL
Phenacetin	10.0	100.0	PPB	PQL
Phenanthrene	10.0	100.0	PPB	PQL

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Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
Phenol	10.0	25600.0	PPB	CFWTL
Phenylenediamine	10.0	100.0	PPB	PQL
Phorate	2.0	20.0	PPB	PQL
Phthalic acid esters	10.0	30.0	PPB	CFWTL
Plutonium-238	.1	16.0	pCi/L	DCG
Plutonium-239,40	.1	12.0	pCi/L	DCG
Pronamide	10.0	100.0	PPB	PQL
Propionitrile	5.0	50.0	PPB	PQL
Pyrene	10.0	100.0	PPB	PQL
Pyridine	500.0	500.0	PPB	PQL
Radium	1.0	50.0	pCi/L	MCL
Ruthenium-103	20.0	2000.0	PPB	MCL
Ruthenium-106	172.5	300.0	pCi/L	MCL
Safrol	10.0	100.0	PPB	PQL
Selenium	5.0	100.0	PPB	MCL
Silver, filtered	10.0	10.0	PPB	CFWTL ³
Strontium-89	5.0	200.0	pCi/L	MCL
Strontium-90	5.0	80.0	pCi/L	MCL
Styrene	5.0	10.0	PPB	PQL
Sulfate	500.0	2500000.0	PPB	MCL
Sym-trinitrobenzene	10.0	100.0	PPB	PQL
Technetium-99	15.0	9000.0	pCi/L	MCL
Tetrachloroethylene	5.0	8400.0	PPB	CFWTL
Tetraethylpyrophosphate	2.0	100.0	PPB	PQL
Thallium	5.0	400.0	PPB	CFWTL
Tin, filtered	30.0	80000.0	PPB	PQL
Toluene	5.0	20.0	PPB	PQL
Toxaphene	1.0	1.0	PPB	CFWTL ³
Trans-1,2-dichloroethylene	5.0	10.0	PPB	PQL
Trichloroethylene	5.0	50.0	PPB	MCL
Trichloromonofluoromethane	10.0	50.0	PPB	PQL
Uranium	.5	400.0	pCi/L	DCG
Uranium, chemical	.7	590.0	UG/L	DCG
Vanadium, filtered	5.0	400.0	PPB	PQL
Vinyl Acetate	5.0	50.0	PPB	PQL
Vinyl chloride	10.0	20.0	PPB	MCL
Xylene-m	5.0	50.0	PPB	PQL
Xylene-o,p	5.0	50.0	PPB	PQL
Zinc, filtered	5.0	1100.0	PPB	CFWTL

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Table 1. Collection Criteria

Constituent	Detn. Limit	Collection Criteria	Units	Basis ¹
m-Nitroaniline	10.0	500.0	PPB	PQL
o-Nitroaniline	10.0	500.0	PPB	PQL
p-Dichlorobenzene	10.0	500.0	PPB	PQL
p-Nitrophenol	10.0	1500.0	PPB	CFWTL

1 The basis for collection criteria are as follows:

- MCL - 10X the Maximum Contaminant Level as defined in 40 CFR 141, 40 CFR 143, and EPA 570/9-76-003
- PQL - 10X the Practical Quantitation Limit as listed in Appendix IX of 40 CFR 264
- CFWTL - 10X the Chronic Freshwater Toxicity Level as defined in EPA 440/5-86-001
- DCG - 10X one-twenty-fifth of the Derived Concentration Guide as listed in DOE Order 5400.5

2 Based on 10X MCL for 1,1,1-trichloroethane.

3 Criterion is below current detection limit so detection limit is used as criterion.

4 All chromium is assumed to be hexavalent.

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**Table 2. Constituents Not Analyzed
for at Hanford but Listed in the CFWTL**

2-chlorophenyl phenyl
Methylene bromide
Chlorine
Chloroprene
Chlorpyrifos
Chromium (tri)
Demeton
Entrin aldehyde
Gamphur
Guthion
Malathion
Mirex
Thionazin

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**Table 3. Constituents That Are Found In At Least One Well
Above The Collection Criteria Established In This Strategy.**

Constituent	Units	Detn. Limit	Collection Criteria
Gross beta	pCi/L	8.00	500.0
Strontium-90	pCi/L	5.00	80.0
Carbon Tetrachloride	PPB	5.00	50.0
Natural uranium	UG/L		590.0
Uranium	pCi/L	.10	400.0
Nitrate	PPB	500.00	450000.0
Gross alpha	pCi/L	4.00	150.0
Iodine-129	pCi/L	1.00	10.0
Chromium	PPB	10.00	110.0
Cyanide	PPB	10.00	52.0
Plutonium-239/40	pCi/L	.10	12.0
Toluene	PPB	5.00	20.0
Trans-1,2-dichloroethene	PPB	5.00	10.0
Manganese	PPB	5.00	500.0
Mercury	PPB	.10	.1
Chloroform	PPB	5.00	1000.0

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**Table 4. List of Wells Requiring Purge Water Containment
Based on the Most Recent Sampling for The Constituent Listed
in Table 1 of WHC Purgewater Strategy Document.**

<u>Wellname</u>	<u>Constituent-Units Code</u>	<u>Action Level</u>	<u>Collection Date</u>	<u>Analytical Value</u>	<u>Constituent</u>
1-D2-5	H22 FCHROMI ppb	110	01MAR90	120	Chromium, filtered
1-D5-12	H22 FCHROMI ppb	110	06MAR90	464	Chromium, filtered
1-D8-3	H22 FCHROMI ppb	110	01MAR90	146	Chromium, filtered
1-F5-3	111 BETA pCi/L	500	28FEB90	533	Gross beta
	121 SR-90 pCi/L	80	17OCT89	244	Strontium-90
1-F8-1	212 ALPHA pCi/L	150	13OCT87	219	Gross alpha
1-H4-3	H22 FCHROMI ppb	110	23APR90	141	Chromium, filtered
1-H4-7	H22 FCHROMI ppb	110	23APR90	136	Chromium, filtered
1-H4-11	H22 FCHROMI ppb	110	23APR90	142	Chromium, filtered
1-H4-12C	H22 FCHROMI ppb	110	17APR90	283	Chromium, filtered
1-H4-14	H22 FCHROMI ppb	110	25APR90	358	Chromium, filtered
1-H4-15A	H22 FCHROMI ppb	110	18APR90	114	Chromium, filtered
1-H4-18	H22 FCHROMI ppb	110	20APR90	126	Chromium, filtered
1-K-20	H22 FCHROMI ppb	110	01MAR90	156	Chromium, filtered

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Table 4. List of Wells Requiring Purge Water Containment
Based on the Most Recent Sampling for The Constituent Listed
in Table 1 of WHC Purgewater Strategy Document.

<u>Wellname</u>	<u>Constituent-Units</u> <u>Code</u>	<u>Action</u> <u>Level</u>	<u>Collection</u> <u>Date</u>	<u>Analytical</u> <u>Value</u>	<u>Constituent</u>
1-K-22	H22 FCHROMI ppb	110	02MAR90	157	Chromium, filtered
1-N-2	111 BETA pCi/L	500	02FEB90	3320	Gross beta
	121 SR-90 pCi/L	80	02FEB90	1960	Strontium-90
1-N-3	111 BETA pCi/L	500	14FEB90	680	Gross beta
	121 SR-90 pCi/L	80	14FEB90	607	Strontium-90
1-N-5	111 BETA pCi/L	500	15JUN89	665	Gross beta
	121 SR-90 pCi/L	80	15JUN89	492	Strontium-90
1-N-7	038 I-131 pCi/L	30	16JAN87	309	Iodine-131
1-N-14	111 BETA pCi/L	500	01FEB90	2100	Gross beta
	121 SR-90 pCi/L	80	01FEB90	987	Strontium-90
1-N-16	H31 FIRON ppb	3000	01FEB90	3590	Iron, filtered
	H29 FMANGAN ppb	500	01FEB90	2050	Manganese, filtered
1-N-17	H29 FMANGAN ppb	500	01FEB90	610	Manganese, filtered
	121 SR-90 pCi/L	80	10NOV89	111	Strontium-90
1-N-18	111 BETA pCi/L	500	20JUN89	1200	Gross beta
	121 SR-90 pCi/L	80	20JUN89	415	Strontium-90

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**Table 4. List of Wells Requiring Purge Water Containment
Based on the Most Recent Sampling for The Constituent Listed
in Table 1 of WHC Purgewater Strategy Document.**

<u>Wellname</u>	<u>Constituent-Units</u> <u>Code</u>	<u>Action</u> <u>Level</u>	<u>Collection</u> <u>Date</u>	<u>Analytical</u> <u>Value</u>	<u>Constituent</u>
1-N-27	111 BETA pCi/L	500	08FEB90	574	Gross beta
	121 SR-90 pCi/L	80	08FEB90	283	Strontium-90
1-N-28	038 I-131 pCi/L	30	14JAN87	28600	Iodine-131
1-N-29	111 BETA pCi/L	500	07FEB90	2020	Gross beta
	038 I-131 pCi/L	30	16JAN87	14100	Iodine-131
	121 SR-90 pCi/L	80	07FEB90	1280	Strontium-90
1-N-30	038 I-131 pCi/L	30	14JAN87	687	Iodine-131
1-N-32	038 I-131 pCi/L	30	16JAN87	4830	Iodine-131
1-N-33	038 I-131 pCi/L	30	16JAN87	8500	Iodine-131
	121 SR-90 pCi/L	80	05FEB90	197	Strontium-90
1-N-36	038 I-131 pCi/L	30	16JAN87	11200	Iodine-131
	121 SR-90 pCi/L	80	01DEC89	224	Strontium-90
1-N-37	038 I-131 pCi/L	30	16JAN87	4380	Iodine-131
1-N-39	111 BETA pCi/L	500	15MAY90	851	Gross beta
	038 I-131 pCi/L	30	16JAN87	5310	Iodine-131
	121 SR-90 pCi/L	80	21DEC89	454	Strontium-90

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<u>Wellname</u>	<u>Constituent-Units</u> <u>Code</u>	<u>Action</u> <u>Level</u>	<u>Collection</u> <u>Date</u>	<u>Analytical</u> <u>Value</u>	<u>Constituent</u>
1-N-45	111 BETA pCi/L	500	01DEC88	2480	Gross beta
	038 I-131 pCi/L	30	16JAN87	3760	Iodine-131
	121 SR-90 pCi/L	80	01DEC88	1130	Strontium-90
1-N-54	121 SR-90 pCi/L	80	01NOV89	171	Strontium-90
1-N-56	111 BETA pCi/L	500	01NOV89	691	Gross beta
	121 SR-90 pCi/L	80	01NOV89	364	Strontium-90
1-N-67	111 BETA pCi/L	500	05FEB90	16500	Gross beta
	121 SR-90 pCi/L	80	05FEB90	8980	Strontium-90
2-E17-1	081 I-129 pCi/L	10	10AUG87	47.3	Iodine-129
2-E17-5	081 I-129 pCi/L	10	16MAY89	13.2	Iodine-129
2-E17-8	081 I-129 pCi/L	10	02SEP87	29.2	Iodine-129
2-E17-9	081 I-129 pCi/L	10	16MAY89	16	Iodine-129
2-E17-13	081 I-129 pCi/L	10	02DEC87	10.1	Iodine-129
2-E17-14	081 I-129 pCi/L	10	15MAY89	14	Iodine-129
2-E17-15	081 I-129 pCi/L	10	21DEC88	12.7	Iodine-129

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<u>Wellname</u>	<u>Constituent-Units Code</u>	<u>Action Level</u>	<u>Collection Date</u>	<u>Analytical Value</u>	<u>Constituent</u>
2-E23-1	A66 TOLUENE ppb	20	19MAR90	30	Toluene
2-E24-1	081 I-129 pCi/L	10	13JUL87	44.6	Iodine-129
	281 I-129DW pCi/L	10	11MAY88	26.6	Iodine-129 (for drinking water regs)
2-E24-11	C72 NITRATE ppb	450000	12APR87	470000	Nitrate
2-E27-15	H38 FMERCUR ppb	0.12	26FEB90	0.23	Mercury, filtered
2-E28-23	111 BETA pCi/L	500	23MAR90	12900	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	21.7	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	5240	Strontium-90
2-E28-24	112 ALPHAHI pCi/L	150	06APR90	1250	Gross alpha, high DL
	100 PU39-40 pCi/L	12	06APR90	144	Plutonium-239,240
	121 SR-90 pCi/L	80	06APR90	328	Strontium-90
2-E28-25	111 BETA pCi/L	500	23MAR90	12000	Gross beta
	100 PU39-40 pCi/L	12	23MAR90	19.3	Plutonium-239,240
	121 SR-90 pCi/L	80	23MAR90	6200	Strontium-90
2-E33-3	H38 FMERCUR ppb	0.12	23MAR88	0.17	Mercury, filtered
2-W6-1	A61 TETRANE ppb	50	10JUN87	220	Tetrachloromethane [Carbon Tetrachloride]

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<u>Wellname</u>	<u>Constituent-Units Code</u>	<u>Action Level</u>	<u>Collection Date</u>	<u>Analytical Value</u>	<u>Constituent</u>
2-W6-2	A61 TETRANE ppb	50	10MAY90	102	Tetrachloromethane [Carbon Tetrachloride]
2-W7-4	A61 TETRANE ppb	50	08MAY90	158	Tetrachloromethane [Carbon Tetrachloride]
2-W10-1	H65 HNITRAT ppb	450000	28JUL88	456000	Nitrate, high DL
2-W10-3	H65 HNITRAT ppb	450000	28JUL88	661000	Nitrate, high DL
2-W10-4	A61 TETRANE ppb	50	01DEC88	2800	Tetrachloromethane [Carbon Tetrachloride]
2-W10-9	H22 FCHROM1 ppb	110	28FEB90	135	Chromium, filtered
	A61 TETRANE ppb	50	23AUG88	2300	Tetrachloromethane [Carbon Tetrachloride]
2-W11-7	A61 TETRANE ppb	50	10NOV88	2500	Tetrachloromethane [Carbon Tetrachloride]
2-W11-14	212 ALPHA pCi/L	150	09MAR89	173	Gross alpha
	112 ALPHAHI pCi/L	150	13APR90	207	Gross alpha, high DL
	A61 TETRANE ppb	50	13APR90	790	Tetrachloromethane [Carbon Tetrachloride]
2-W11-23	H65 HNITRAT ppb	450000	21SEP88	757000	Nitrate, high DL
2-W14-2	C70 CYANIDE ppb	52	10NOV88	69	Cyanide
	A61 TETRANE ppb	50	10NOV88	920	Tetrachloromethane [Carbon Tetrachloride]
2-W14-5	A61 TETRANE ppb	50	10NOV88	860	Tetrachloromethane [Carbon Tetrachloride]

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2-W14-6	A61 TETRANE ppb	50	10NOV88	320	Tetrachloromethane [Carbon Tetrachloride]
2-W15-4	H65 HNITRAT ppb	450000	26SEP88	699000	Nitrate, high DL
	C72 NITRATE ppb	450000	29NOV88	662000	Nitrate
	A61 TETRANE ppb	50	29NOV88	1830	Tetrachloromethane [Carbon Tetrachloride]
2-W15-7	A61 TETRANE ppb	50	29NOV88	2390	Tetrachloromethane [Carbon Tetrachloride]
2-W15-8	112 ALPHAHI pCi/L	150	07MAY90	226	Gross alpha, high D'
	A80 CHLFORM ppb	1000	07MAY90	154	Chloroform [Trichloromethane]
	A61 TETRANE ppb	50	07MAY90	1110	Tetrachloromethane [Carbon Tetrachloride]
2-W15-10	A61 TETRANE ppb	50	29NOV88	3750	Tetrachloromethane [Carbon Tetrachloride]
2-W15-11	A61 TETRANE ppb	50	29NOV88	4350	Tetrachloromethane [Carbon Tetrachloride]
2-W15-12	A61 TETRANE ppb	50	05JUN89	1920	Tetrachloromethane [Carbon Tetrachloride]
2-W15-15	A61 TETRANE ppb	50	13MAR90	800	Tetrachloromethane [Carbon Tetrachloride]
2-W15-16	A61 TETRANE ppb	50	03APR90	8400	Tetrachloromethane [Carbon Tetrachloride]
2-W15-18	A61 TETRANE ppb	50	16MAR90	1700	Tetrachloromethane [Carbon Tetrachloride]
2-W15-19	A61 TETRANE ppb	50	04MAY90	710	Tetrachloromethane [Carbon Tetrachloride]

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2-W15-20	A61 TETRANE ppb	50	04MAY90	192	Tetrachloromethane [Carbon Tetrachloride]
2-W15-24	A61 TETRANE ppb	50	13MAR90	380	Tetrachloromethane [Carbon Tetrachloride]
2-W18-4	A61 TETRANE ppb	50	06JUN89	194	Tetrachloromethane [Carbon Tetrachloride]
2-W18-5	A61 TETRANE ppb	50	30NOV88	3640	Tetrachloromethane [Carbon Tetrachloride]
2-W18-9	A61 TETRANE ppb	50	03MAY90	121	Tetrachloromethane [Carbon Tetrachloride]
2-W18-15	A61 TETRANE ppb	50	01DEC88	89	Tetrachloromethane [Carbon Tetrachloride]
2-W18-17	A61 TETRANE ppb	50	20APR90	2000	Tetrachloromethane [Carbon Tetrachloride]
2-W18-21	A61 TETRANE ppb	50	13MAR90	180	Tetrachloromethane [Carbon Tetrachloride]
2-W18-23	A61 TETRANE ppb	50	11MAY90	675	Tetrachloromethane [Carbon Tetrachloride]
2-W18-24	A61 TETRANE ppb	50	03APR90	600	Tetrachloromethane [Carbon Tetrachloride]
2-W18-26	A61 TETRANE ppb	50	04MAY90	250	Tetrachloromethane [Carbon Tetrachloride]
2-W19-3	212 ALPHA pCi/L	150	13JAN89	1840	Gross alpha
	112 ALPHAI pCi/L	150	04APR90	1360	Gross alpha, high DL
	081 I-129 pCi/L	10	20AUG87	32.9	Iodine-129
	A61 TETRANE ppb	50	02DEC88	120	Tetrachloromethane [Carbon Tetrachloride]

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2-W19-3	104 U pCi/L	420	04APR90	737	Uranium
	124 U-CHEM ug/L	600	10MAR89	2000	Uranium, chemical
2-W19-9	212 ALPHA pCi/L	150	13FEB89	998	Gross alpha
	081 I-129 pCi/L	10	20AUG87	21.4	Iodine-129
	A61 TETRANE ppb	50	15DEC88	112	Tetrachloromethane [Carbon Tetrachloride]
	124 U-CHEM ug/L	600	13FEB89	1400	Uranium, chemical
2-W19-11	212 ALPHA pCi/L	150	21MAR88	1930	Gross alpha
	112 ALPHAI pCi/L	150	02APR90	867	Gross alpha, high DL
	081 I-129 pCi/L	10	20AUG87	31.6	Iodine-129
	A61 TETRANE ppb	50	18JAN88	115	Tetrachloromethane [Carbon Tetrachloride]
	104 U pCi/L	420	02APR90	1030	Uranium
	124 U-CHEM ug/L	600	21MAR88	2610	Uranium, chemical
2-W19-15	A61 TETRANE ppb	50	04APR90	127	Tetrachloromethane [Carbon Tetrachloride]
2-W19-16	212 ALPHA pCi/L	150	13FEB89	641	Gross alpha
	112 ALPHAI pCi/L	150	28MAR90	449	Gross alpha, high DL
	A61 TETRANE ppb	50	28MAR90	193	Tetrachloromethane [Carbon Tetrachloride]
	104 U pCi/L	420	28MAR90	478	Uranium
	124 U-CHEM ug/L	600	13FEB89	641	Uranium, chemical

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2-W19-18	212 ALPHA pCi/L	150	13JAN89	2000	Gross alpha
	112 ALPHAHI pCi/L	150	28MAR90	1280	Gross alpha, high DL
	A61 TETRANE ppb	50	28MAR90	89	Tetrachloromethane [Carbon Tetrachloride]
	104 U pCi/L	420	28MAR90	1130	Uranium
	124 U-CHEM ug/L	600	06OCT89	1880	Uranium, chemical
2-W19-19	212 ALPHA pCi/L	150	12JAN89	285	Gross alpha
	112 ALPHAHI pCi/L	150	04APR90	268	Gross alpha, high DL
	111 BETA pCi/L	500	04APR90	1090	Gross beta
	H65 HNITRAT ppb	450000	06OCT89	1340000	Nitrate, high DL
	C72 NITRATE ppb	450000	04APR90	1250000	Nitrate
	197 TC-99 pCi/L	9000	06OCT89	24600	Technetium-99
	104 U pCi/L	420	31OCT89	547	Uranium
	124 U-CHEM ug/L	600	06OCT89	638	Uranium, chemical
2-W19-20	212 ALPHA pCi/L	150	11JAN89	213	Gross alpha
	112 ALPHAHI pCi/L	150	20MAR90	214	Gross alpha, high DL
	111 BETA pCi/L	500	20MAR90	1830	Gross beta
	H65 HNITRAT ppb	450000	05OCT89	1110000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	1050000	Nitrate
	197 TC-99 pCi/L	9000	05OCT89	25400	Technetium-99

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2-W19-23	H65 HNITRAT ppb	450000	05OCT89	490000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	586000	Nitrate
2-W19-24	212 ALPHA pCi/L	150	12JAN89	273	Gross alpha
	112 ALPHAIH pCi/L	150	20MAR90	254	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2740	Gross beta
	H65 HNITRAT ppb	450000	06OCT89	1040000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	584000	Nitrate
	197 TC-99 pCi/L	9000	06OCT89	41000	Technetium-99
2-W19-25	212 ALPHA pCi/L	150	12JAN89	183	Gross alpha
	112 ALPHAIH pCi/L	150	20MAR90	197	Gross alpha, high
	111 BETA pCi/L	500	20MAR90	2160	Gross beta
	H65 HNITRAT ppb	450000	05OCT89	960000	Nitrate, high DL
	C72 NITRATE ppb	450000	20MAR90	931000	Nitrate
	197 TC-99 pCi/L	9000	05OCT89	33000	Technetium-99
2-W19-26	212 ALPHA pCi/L	150	01NOV88	300	Gross alpha
	H65 HNITRAT ppb	450000	05OCT89	1360000	Nitrate, high DL
	C72 NITRATE ppb	450000	27OCT89	1300000	Nitrate

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2-W22-9	281 I-129DW pCi/L	10	27SEP88	23.9	Iodine-129 (for drinking water regs)
2-W22-20	H22 FCHROMI ppb	110	21FEB90	301	Chromium, filtered
2-W23-7	H38 FMERCUR ppb	0.12	09JUN87	0.16	Mercury, filtered
3-1-16B	A91 TRANDC E ppb	10	18DEC89	135	trans-1,2- Dichloroethene
3-1-17A	112 ALPHAHI pCi/L	150	22MAY90	159	Gross alpha, high DL
6-35-70	081 I-129 pCi/L	10	09JUL87	47.2	Iodine-129
	281 I-129DW pCi/L	10	15FEB90	10.7	Iodine-129 (for drinking water regs)
6-37-43	081 I-129 pCi/L	10	10SEP87	10.712	Iodine-129
6-38-70	A61 TETRANE ppb	50	06APR90	58	Tetrachloromethane [Carbon Tetrachloride]
6-39-79	A61 TETRANE ppb	50	23FEB89	820	Tetrachloromethane [Carbon Tetrachloride]
6-49-55A	C70 CYANIDE ppb	52	27APR90	84.9	Cyanide
6-50-53	111 BETA pCi/L	500	28APR89	1440	Gross beta
	C70 CYANIDE ppb	52	17JAN89	641	Cyanide
	H65 HNITRAT ppb	450000	28APR89	596000	Nitrate, high DL
	C72 NITRATE ppb	450000	17JAN89	625000	Nitrate

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6-53-47B	121 SR-90 pCi/L	80	26MAR90	113	Strontium-90
6-53-48A	121 SR-90 pCi/L	80	19APR89	124	Strontium-90
6-53-48B	121 SR-90 pCi/L	80	19APR89	240	Strontium-90
6-54-48	121 SR-90 pCi/L	80	26MAR90	126	Strontium-90
6-97-43	H22 FCHROMI ppb	110	16JAN89	192	Chromium, filtered
6-97-51A	H22 FCHROMI ppb	110	31AUG88	112	Chromium, filtered

113 Total Wells Require Purgewater Containment

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Hanford Facility RCRA Permit Modification Notification Forms

**Part III, Operating Unit 2
PUREX Storage Tunnels**

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Submitted by Co-Operator:



Kurtis L. Kehler

9/10/10

Date

Reviewed by RL Program Office:

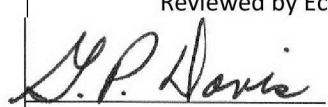



Richard A. Holten

9/2/10

Date

Hanford Facility RCRA Permit Modification Notification Form														
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2													
Description of Modification: Hanford Facility RCRA Permit III.2: <div style="text-align: center;">PART III, OPERATING UNIT 2 UNIT-SPECIFIC CONDITIONS PUREX Storage Tunnels</div>														
Unit Description: The PUREX Storage Tunnels are mixed waste storage units consisting of two underground railroad tunnels: Tunnel Number 1, designated 218-E-14, and Tunnel Number 2, designated 218-E-15. This Chapter sets forth the operating Conditions for this TSD unit.														
Operating Unit 2: Chapter 1.0 Part A Form, dated October 1, 2008 Chapter 3.0 Waste Analysis Plan, dated October 2006 Chapter 4.0 Process Information, dated October 2006 Chapter 6.0 Procedures to Prevent Hazards, dated October 2006 (also refer to Permit Attachment 33, §6.1) <u>Addendum E Procedures to Prevent Hazards, dated September 30, 2010</u> <u>Addendum F Preparedness and Prevention, dated September 30, 2010</u> <u>Addendum G</u> Chapter 8.0 Personnel Training, dated <u>September 30, 2010</u> October 2006 <u>Addendum I Inspection Requirements, dated September 30, 2010</u> Addendum J Contingency Plan, dated <u>September 30, 2010</u> June 30, 2009 Chapter 11.0 Closure and Financial Assurance, dated October 2006 Chapter 12.0 Reporting and Recordkeeping (refer to Permit Attachment 33, Table 12.1)														
III.2.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS														
III.2.A.1 The Permittees will comply with all conditions in this Chapter and its addenda and chapters with respect to storage of waste in the miscellaneous units, (PUREX Storage Tunnels), in addition to applicable requirements in Permit Parts I and II.														
III.2.A.2 In the event that the Part III, Unit Specific Conditions for Operating Unit 2, PUREX Storage Tunnels conflict with the Part I, Standard Conditions and/or Part II, General Facility Conditions of the Permit, the unit specific conditions for Operating Unit 2, PUREX Storage Tunnels prevail.														
III.2.B UNIT SPECIFIC CONDITIONS														
III.2.B.1 Portions of Permit Attachment 4, <i>Hanford Emergency Management Plan</i> , (DOE/RL-94-02) that are not made enforceable by inclusion in the applicability matrix for that document are not made enforceable by reference in this document.														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%; text-align: left; padding: 2px;">WAC 173-303-830 Modification Class</th> <th style="width: 12.5%; text-align: center; padding: 2px;">Class 1</th> <th style="width: 12.5%; text-align: center; padding: 2px;">Class 1</th> <th style="width: 12.5%; text-align: center; padding: 2px;">Class 2</th> <th style="width: 12.5%; text-align: center; padding: 2px;">Class 3</th> </tr> <tr> <td style="padding: 2px;">Please mark the Modification Class:</td> <td style="text-align: center; padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> </table>					WAC 173-303-830 Modification Class	Class 1	Class 1	Class 2	Class 3	Please mark the Modification Class:	X			
WAC 173-303-830 Modification Class	Class 1	Class 1	Class 2	Class 3										
Please mark the Modification Class:	X													
Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1. Enter wording of WAC 173-303-830, Appendix I Modification citation: A.1. General Permit Provisions, Administrative and informational changes														
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) <u>Reason for denial:</u>			Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: center;"> 7-14-10 Date </div>											

Hanford Facility RCRA Permit Modification Notification Form				
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2			
<u>Description of Modification:</u> Remove Chapter 6.0, dated October 2006, and replace with Addendum E, Addendum F, and Addendum I, dated September 30, 2010. Chapter 6.0, Procedures to Prevent Hazards is being replaced with Addendum E, Security; Addendum F, Preparedness and Prevention; and Addendum I, Inspection Requirements, dated September 30, 2010.				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1. Enter wording of WAC 173-303-830, Appendix I Modification citation: A.1. General Permit Provisions, Administrative and informational changes				
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) <u>Reason for denial:</u>		Reviewed by Ecology: <div style="text-align: center;">  </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> G. P Davis 7-14-10 </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Date </div>		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2			
<u>Description of Modification:</u> Remove Chapter 8.0, dated October 2006, and replace with Addendum G, dated September 30, 2010:				
WAC 173-303-830 Modification Class	Class 1	Class 1	Class 2	Class 3
Please mark the Modification Class:	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1. Enter wording of WAC 173-303-830, Appendix I Modification citation: A.1. General Permit Provisions, Administrative and informational changes				
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial)		Reviewed by Ecology:		
<u>Reason for denial:</u>				
		Date: 7-14-10		
		G. P Davis		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2			
<u>Description of Modification:</u> Remove Addendum J, dated September 30, 2008, and replace with Addendum J, dated September 30, 2010: Addendum J, §J.1.4: J.1.4 Facility Manager CH2MHill Plateau Remediation Company Fluor Hanford P.O. Box 16001000 Richland, Washington 99352- 16001000				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) <u>Reason for denial:</u>		Reviewed by Ecology: <div style="text-align: center; margin-top: 20px;"> G. P Davis </div> <div style="text-align: right; margin-top: 20px;"> 7-14-10 Date </div>		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2			
<u>Description of Modification:</u> Remove Addendum J, dated September 30, 2008, and replace with Addendum J, dated September 30, 2010: Addendum J, §J.3:				
J.3 IMPLEMENTATION OF THE PLAN In accordance with WAC 173-303-360 (2)(b), the BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information. The BED shall use the following guidelines to determine if an event has met the requirements of WAC 173-303-360 (2)(d): <ol style="list-style-type: none"> 1. The event involved an unplanned spill, release, fire, or explosion, <div style="text-align: center;">AND</div> 2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable.), or 2.b The unplanned fire or explosion occurred at the PUREX Storage Tunnels or transportation activity subject to RCRA contingency planning requirements, <div style="text-align: center;">AND</div> 3. Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists. As soon as possible, after stabilizing event conditions, the BED shall determine, in consultation with the Site contractor environmental single-point-of-contact, if notification to the Washington State Department of Ecology is needed to meet WAC-173-303-360 (2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in Attachment 4, <i>Hanford Emergency Management Plan</i> (DOE/RL-94-02), Section 4.2. If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident. The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from HP, HFD, or ambulance units is required, the Hanford Emergency Response Number (911 or 373-0911 if using a cellular phone) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the Central Plateau Surveillance and Maintenance facilities, the POC business number is used (373-3800).				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) <u>Reason for denial:</u>		Reviewed by Ecology: <div style="text-align: center; font-size: 1.2em;"> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> G. P Davis 7-14-10 </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Date </div>		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2			
<u>Description of Modification:</u> Remove Addendum J, dated September 30, 2008, and replace with Addendum J, dated September 30, 2010: Addendum J, §J.3.2:				
J.3.2 Fire or Explosion The fire or explosion hazard associated with the PUREX Storage Tunnels is considered to be very low because of the minimal amount of combustibles stored within the tunnels and the lack of an ignition source. <ul style="list-style-type: none"> Because of the potential for mixed waste to leach, water is not the preferred choice for fire control. Reduction of the air supply to the storage area by isolation of the tunnel exhaust system, if operating, should permit a fire to self-extinguish. Should the fire continue to spread, heavy equipment and cranes will be called to the scene to cover areas of the tunnels that might collapse. In addition, the following actions are taken in the event of a fire or explosion: If present in the Tunnels, personnel leave by the nearest safe exit and proceed to the designated staging area for accounting The single point-of-contact (911 <u>or 373-0911 if using a cellular phone</u>) is notified immediately, who in turn initiates notifications to the EC/BED (or alternate) if necessary The EC/BED proceeds directly to the scene (if not already there) The EC/BED obtains all necessary information pertaining to the incident Depending on the severity of the event, the EC/BED or his/her designee may be required to provide notifications to the site contractor environmental single point of contact, which in turn notifies offsite agencies and/or the occurrence notification center informing them as to the extent of the emergency (including estimates of mixed waste quantities released to the environment) and any actions necessary to protect nearby buildings and/or structures. Depending on the severity, the EC/BED requests activation of the affected area ICP to establish organizations to provide assistance from DOE-RL, other Hanford site contractors, and outside agencies (if 911 <u>or 373-0911 if using a cellular phone</u> is called, the ICP will automatically be activated). The Hanford Patrol establishes roadblocks within the area to route traffic away from the emergency scene. If necessary, Hanford Fire Department medical personnel remove injured personnel to a safe location, apply first aid, and prepare the injured for transport to medical aid stations or to local hospitals. Depending on the magnitude of a natural phenomena event, fire, or an explosion, damage to the storage tunnels is possible. The hazards could involve personnel and environmental exposure to mixed waste. In the event of such an occurrence, a recovery plan will be developed. The recovery plan will take into consideration methods, if any, for retrieval of the waste stored within the tunnels. 				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) <u>Reason for denial:</u>		Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 7-14-10 Date </div>		

Hanford Facility RCRA Permit Modification Notification Form														
Unit: PUREX STORAGE TUNNELS	Permit Part PART III, OPERATING UNIT 2													
Description of Modification: Remove Addendum J, dated September 30, 2008, and replace with Addendum J, dated September 30, 2010: Addendum J, §J.4:														
J.4 UNIT/BUILDING EMERGENCY RESPONSE PROCEDURES <p>The initial response to any emergency is to immediately protect the health and safety of persons in the area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment are secondary responses.</p> <p><u>Emergency action levels associated with event classifications applicable to the PUREX Storage Tunnels include the following. A Site Area Emergency can be declared for a hazardous material release resulting from a fire, an explosion, operational accident involving a sufficient quantity of hazardous material, natural hazards (i.e., seismic event and/or tornado/high winds), an aircraft crash, discovery or detonation of an explosive device, a hostage situation or armed intruders, or catastrophic loss of containment confinement. An Alert Emergency can be declared for a fire, explosion, operational accident involving a sufficient quantity of hazardous material, natural hazards (i.e., seismic event and/or tornado/high winds), and aircraft crash, or accident resulting in facility damage that threatens a confinement structure.</u> The preceding sections describe the process for implementing basic protective actions as well as descriptions of response actions for events.</p>														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">WAC 173-303-830 Modification Class</td> <td style="width: 12.5%; text-align: center; padding: 5px;">Class 1</td> <td style="width: 12.5%; text-align: center; padding: 5px;">Class 1</td> <td style="width: 12.5%; text-align: center; padding: 5px;">Class 2</td> <td style="width: 12.5%; text-align: center; padding: 5px;">Class 3</td> </tr> <tr> <td style="padding: 5px;">Please mark the Modification Class:</td> <td style="text-align: center; padding: 5px;">X</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>					WAC 173-303-830 Modification Class	Class 1	Class 1	Class 2	Class 3	Please mark the Modification Class:	X			
WAC 173-303-830 Modification Class	Class 1	Class 1	Class 2	Class 3										
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Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan														
Modification Approved: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (state reason for denial) Reason for denial:			Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: center;"> 7-14-10 Date </div>											

Hanford Facility RCRA Permit Modification

**Part III, Operating Unit 2
PUREX Storage Tunnels**

Remove and Replace the Following Sections:

- Part III, Operating Unit 2, PUREX Permit Conditions dated June 30, 2009, replace with PUREX Permit Conditions dated September 30, 2010
- Remove Chapter 6.0, dated October 2006, and replace with Addendum E, Addendum F, and Addendum I, dated September 30, 2010
- Remove Chapter 8.0, dated October 2006, and replace with Addendum G, dated September 30, 2010

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PART III, OPERATING UNIT 2 PERMIT CONDITIONS

PUREX Storage Tunnels

Unit Description:

The PUREX Storage Tunnels are mixed waste storage units consisting of two underground railroad tunnels: Tunnel Number 1, designated 218-E-14, and Tunnel Number 2, designated 218-E-15. This Chapter sets forth the operating Conditions for this TSD unit.

Operating Unit 2:

Chapter 1.0 Part A Form, dated October 1, 2008
Chapter 3.0 Waste Analysis Plan, dated October 2006
Chapter 4.0 Process Information, dated October 2006
Addendum E Procedures to Prevent Hazards, dated September 30, 2010
Addendum F Preparedness and Prevention, dated September 30, 2010
Addendum G Personnel Training, dated September 30, 2010
Addendum I Inspection Requirements, dated September 30, 2010
Addendum J Contingency Plan, dated September 30, 2010
Chapter 11.0 Closure and Financial Assurance, dated October 2006
Chapter 12.0 Reporting and Recordkeeping (refer to Permit Attachment 33, Table 12.1)

III.2.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS

III.2.A.1 The Permittees will comply with all conditions in this Chapter and its addenda and chapters with respect to storage of waste in the miscellaneous units, (PUREX Storage Tunnels), in addition to applicable requirements in Permit Parts I and II.

III.2.A.2 In the event that the Part III, Unit Specific Conditions for Operating Unit 2, PUREX Storage Tunnels conflict with the Part I, Standard Conditions and/or Part II, General Facility Conditions of the Permit, the unit specific conditions for Operating Unit 2, PUREX Storage Tunnels prevail.

III.2.B UNIT SPECIFIC CONDITIONS

III.2.B.1 Portions of Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02) that are not made enforceable by inclusion in the applicability matrix for that document are not made enforceable by reference in this document.

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1 **Addendum E** **Security**

2 E. SECURITYE.1

3 E.1 SECURITYE.1

4 E.1.1 Waiver.....E.1

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E. SECURITY

This addendum discusses security for the PUREX Storage Tunnels.

E.1 SECURITY

The Permittees will post signs at access points to the PUREX Storage Tunnels stating, DANGER-UNAUTHORIZED PERSONNEL KEEP OUT, or an equivalent legend. These signs will be written in English, legible from a distance of 7.6 meters, and visible from any approach to the active portion. [[WAC 173-303-310](#)(2)(a)].

E.1.1 Waiver

A waiver of the security procedures and equipment requirements for the PUREX Storage Tunnels is not requested. Therefore, the requirements of WAC 173-303-310(1)(a) and (b) are not applicable to the PUREX Storage Tunnels.

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1 Addendum F

Preparedness and Prevention

2	F	PREPARDENESS AND PREVENTION.....	F.1
3	F.1	PREPAREDNESS AND PREVENTION REQUIREMENTS.....	F.1
4	F.1.1	Equipment Requirements.....	F.1
5	F.1.2	Aisle Space Requirement.....	F.1
6	F.2	PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT.....	F.1
7	F.1.3	Unloading Operations	F.1
8	F.1.4	Runoff.....	F.2
9	F.1.5	Water Supplies.....	F.2
10	F.1.6	Equipment and Power Failures	F.2
11	F.1.7	Personnel Protection Equipment.....	F.3
12	F.3	PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR	
13		INCOMPATIBLE WASTE	F.3
14			
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F PREPAREDNESS AND PREVENTION

F.1 PREPAREDNESS AND PREVENTION REQUIREMENTS

This addendum discusses preparedness and prevention measures for the PUREX Storage Tunnels.

F.1.1 Equipment Requirements

The following sections describe the internal and external communications systems and emergency equipment required.

F.1.1.1 Internal Communications

The PUREX Storage Tunnels are not occupied and personnel entry is allowed only on a very limited basis and under close supervision. Normal and emergency communications equipment (portable two-way radios) is available for use.

F.1.1.2 External Communications

External communications equipment for summoning emergency assistance from the Hanford Fire Department and/or emergency response teams are provided by two-way portable radios or other devices.

F.1.1.3 Emergency Equipment

Equipment included in the emergency plan for the PUREX Storage Tunnels is provided in Addendum J.

F.1.1.4 Water for Fire Control

The fire hazard associated with the operation of the PUREX Storage Tunnels is considered to be very low because of the minimal amount of combustibles stored within the tunnels and the lack of an ignition source. In the event it is determined there is a fire in the storage area of the tunnels, the contingency plan will be activated. Because of the potential of the mixed waste stored within the tunnels to leach, the use of water for fire control will be avoided if possible. Reductions of the air supply to the storage area by isolation of the tunnel exhaust system, if operating, should permit the fire to self extinguish. Should the fire continue to propagate, heavy equipment and cranes will be called to the scene to cover areas of the tunnels that might collapse. Heavy equipment and cranes are readily available on the Hanford Facility at all times and generally are available for deployment to the scene of an emergency within 1 hour. In the event that a fire resulted in the collapse of the tunnels, a recovery plan will be developed in accordance with emergency response procedures included in Addendum J. The recovery plan will take into consideration plans, if any, for retrieval of the waste stored within the tunnel(s).

F.1.2 Aisle Space Requirement

Requirements for aisle space are not considered appropriate for the safe operation of the PUREX Storage Tunnels and were not included in design documents.

F.2 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT

The following sections describe preventive procedures, structures, and equipment.

F.1.3 Unloading Operations

Operation of the PUREX Storage Tunnels does not involve the loading or unloading of dangerous waste. All loading and unloading operations are conducted at the PUREX Facility or other onsite units. Therefore, the requirements of [WAC 173-303-806\(4\)\(a\)\(viii\)\(A\)](#) are not applicable to the PUREX Storage Tunnels.

1 **F.1.4 Runoff**

2 The design of the PUREX Storage Tunnels included consideration and provisions for the control of runoff
3 and run-on. Construction of both tunnels included the application of a moisture barrier before placement
4 of the soil overburden. On Tunnel Number 1, 40.8-kilogram mineral surface roofing was applied to the
5 external surfaces of the structural timbers (top and sides). The roofing material was nailed in place with
6 an overlap of approximately 10 centimeters at all joints and seams. All interior and exterior steel surfaces
7 of Tunnel Number 2 were coated with at least a 0.9-millimeter bituminous, solvent coal tar base, coating
8 compound. The coating was applied using a two coat system, with each coat not less than
9 0.45 millimeters, ensuring a total dry film thickness of not less than 0.9 millimeter.

10 The soil overburden covering the PUREX Storage Tunnels also is contoured to provide a side slope of
11 2 (horizontal) to 1 (vertical). This construction serves to divert any seasonal or unanticipated run-on
12 away from the storage area of the PUREX Storage Tunnels. For potential situations where a natural
13 catastrophic event occurs, inspections of the tunnel side slopes are conducted to ensure the contours
14 remain in a condition that ensures proper runoff and continues to divert run-on away from the tunnel
15 storage areas.

16 Run-on at the PUREX Storage Tunnels is controlled by the design features of the exterior of the tunnels
17 that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels
18 is stored well above the floor level on railcars. The control of run-on combined with the storage of all
19 waste above the floor elevation provides adequate assurance that runoff will not occur at the PUREX
20 Storage Tunnels.

21 **F.1.5 Water Supplies**

22 Water was supplied to the PUREX Storage Tunnels from the PUREX Plant. This water was used for the
23 sole purpose of filling the water-fillable doors should it have been determined necessary. There are no
24 other sources or uses of water at the PUREX Storage Tunnels. The line that supplied water to the
25 PUREX Storage Tunnels was blanked and emptied during deactivation activities. In the future, a
26 temporary source of water would be provided for filling the water fillable door.

27 **F.1.6 Equipment and Power Failures**

28 The procedures, structures, and equipment used to mitigate the effects of equipment failure and power
29 outage are described in the following sections.

30 **F.1.6.1 Mitigation of the Effects of Equipment Failure**

31 Maintaining safe storage of materials in the PUREX Storage Tunnels is not contingent on continued
32 operation of equipment. The operable equipment associated with the PUREX Storage Tunnels were the
33 remote controlled locomotive or waste placement and removal equipment, the railcars, and the water-
34 fillable door and ventilation system for both tunnels. No operable equipment is associated with either
35 tunnel, as these tunnels have been sealed and may no longer receive dangerous waste. Backup or
36 redundant systems are not provided for either tunnel, as failure of the equipment would not have the
37 potential to result in a release of dangerous waste to the environment. There are no hazards associated
38 with tunnel equipment failure.

39 **F.1.6.2 Mitigation of the Effects of Power Failure**

40 Maintaining safe storage of materials in the PUREX Storage Tunnels is not contingent on continued
41 supply of electrical power. Electrical power is required to operate the water-fillable door and the
42 ventilation fan in both tunnels. Backup or redundant ventilation systems are not provided as the system is
43 operated only to maintain air balance and provide secondary control of mixed waste airborne particulate.
44 Power failure to either tunnel would not have the potential to result in the release of dangerous waste or
45 mixed waste to the environment. There are no hazards associated with the shutdown of the tunnel
46 ventilation systems due to loss of electrical power.

1 **F.1.7 Personnel Protection Equipment**

2 Personnel entering the PUREX Storage Tunnels are required to wear special protective clothing and
3 respiratory protection at all times because of the material stored in the PUREX Storage Tunnels.
4 Protective clothing and full-face respirators with filters are considered to be sufficient protection from the
5 dangerous waste stored within the PUREX Storage Tunnels. Personnel are trained and qualified in using
6 the protective equipment and are checked routinely for mask fit.

7 **F.3 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE**
8 **WASTE**

9 There is no reactive or incompatible waste stored in the PUREX Storage Tunnels. The only ignitable
10 waste stored within the tunnels is silver nitrate. The silver nitrate is present within the silver reactors
11 (deposited on unglazed ceramic packing) stored in Tunnel Number 2.

12 Although silver nitrate exhibits the characteristic of ignitability, it is contained within stainless steel
13 vessels, stored on railcars above the floor level, and isolated from combustible materials and other
14 dangerous waste. Additional measures to prevent reaction of the ignitable waste are not considered
15 necessary.

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1 **Addendum G** **Personnel Training**

2 **PUREX Storage Tunnels Training Matrix**

Permit (WA7890008967) Training Category	Training Category ¹					
	General Hanford Facility Training	Contingency Plan Training	Emergency Coordinator Training	Operations Training		
PUREX DWTP Implementing Plan	Orientation Program	Emergency Response (Contingency Plan)	Emergency Coordinator Training	General Waste Management	Containment Building	Misc. Unit
Job title/position						
Nuclear Chemical Operator	X	X		X		X
D&D worker	X	X				
Operations Manager	X	X				
Field Work Supervisor	X	X				
Environmental Compliance Officer	X			X		X
Building Emergency Director	X		X			
Stationary Operating Engineer (SOE)	X				X	

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¹ Refer to the Dangerous Waste Training Plan (DWTP) prepared for PUREX Storage Tunnels for a complete description

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1 **Addendum I** **Inspection Requirements**

2 I. INSPECTION REQUIREMENTSI.1

3 I.1 PUREX STORAGE TUNNELS.....I.1

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5 **Tables**

6 Table I.1. Inspection Schedule.....I.1

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I. INSPECTION REQUIREMENTS

This Addendum discusses the inspection requirements for dangerous waste management units within the PUREX Storage Tunnels.

I.1 PUREX STORAGE TUNNELS

Because waste within the PUREX Storage Tunnels is inaccessible and exposure to the mixed waste would be extremely hazardous to personnel, inspection of the tunnel interior will not be performed. External inspections of the tunnels will be performed annually. The inspection schedule, log, and records will be maintained in the Hanford Facility Operating Record, PUREX Storage Tunnels File for a minimum of 5 years.

Information from inspections will be recorded on inspection logs. The log forms are used to initiate corrective action if necessary. The elements inspected at the PUREX Storage Tunnels are identified in Table I.1. Abnormal conditions are recorded, evaluated, and corrective action initiated as necessary.

Table I.1. Inspection Schedule

Requirement Description	Inspection Frequency	Types of Problems
Perform external surveillance of PUREX Storage Tunnels	Annual	External surfaces of the PUREX Storage Tunnels are observed for evidence of structural deterioration. Tunnel subsidence, erosion of the earth cover, and vent stack damage are of primary concern. The points of access to the PUREX Storage Tunnels are inspected to ensure warning signs are in place, visible, and legible.

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Hanford Facility RCRA Permit Modification Notification Forms
Part III, Operating Unit 3
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

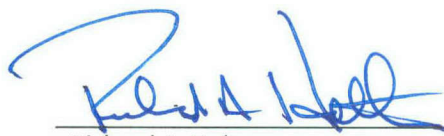
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Submitted by Co-Operator:


Leonard T. Blackford
9/30/10
Date

Reviewed by DOE Program Office:


Richard A. Holten
9/2/10
Date

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3			
Description of Modification: Part III, OU-3, Permit Conditions:				
OPERATING UNIT GROUP 3 PERMIT CONDITIONS Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility				
UNIT DESCRIPTION: <p>The Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility (LERF and 200 Area ETF) consists of an aqueous waste treatment system that provides storage and treatment for a variety of aqueous mixed waste located in the 200 East Area.</p> <p>This document sets forth the operating conditions for the LERF and 200 Area ETF.</p> <p><u>Operating Unit Group 3:</u></p> <p>Chapter 1.0 Part A Form, dated October 1, 2008</p> <p>Chapter 3.0 Waste Analysis Plan, dated June 30, 2007</p> <p>Chapter 4.0 Process Information, dated December 31, 2007</p> <p>Chapter 5.0 Groundwater Monitoring (PNNL-11620 & WHC-SD-EN-AP-024), dated June 30, 2008</p> <p>Chapter 6.0 Procedures to Prevent Hazards, dated June 30, 2007 (also refer to Permit Attachment 33, §6.1)</p> <p>Chapter 7.0 Addendum J Contingency Plan, dated September 30, 2010 June 30, 2009</p> <p>Chapter 8.0 Personnel Training, dated June 30, 2008</p> <p>Chapter 11.0 Closure and Post Closure Requirements, dated October 2006</p> <p>Chapter 12.0 Reporting and Recordkeeping (refer to Permit Attachment 33, Table 12.1)</p>				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: A.1. Enter wording of WAC 173-303-830, Appendix I Modification citation: A.1. General Permit Provisions, Administrative and informational changes				
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: KAC		Reviewed by Ecology: <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> G. P Davis </div> <div style="text-align: center;"> 8-30-10 Date </div> </div>		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3			
Description of Modification: Addendum J, Table J.1:				
Table J.1. Hanford Facility Documents Containing Contingency Plan Requirements of WAC 173-303-350(3)				
Requirement	Permit Attachment 4, Hanford Emergency Management Plan (DOE/RL-94-02)	Building Emergency Plan1 (HNF-IP-0263-ETF)	Part III, OU-3, LERF & 200 Area ETF, Addendum J	
...	
<u>-350(3)(e)</u> - A list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems, and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.	X Hanford Fire Department: Appendix C	X Section 9.0	X Section J.4	
...	
WAC 173-303-830 Modification Class		Class 1	Class ¹ 1	Class 2
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d				
Enter wording of WAC 173-303-830, Appendix I Modification citation:				
B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur Reason for denial:		Reviewed by Ecology:		
<input checked="" type="checkbox"/> Yes 		<input type="checkbox"/> Denied (state reason below)		
		 G. P Davis		
		Date 8-30-10		

Hanford Facility RCRA Permit Modification Notification Form

Unit:
Liquid Effluent Retention Facility &
200 Area Effluent Treatment Facility

Permit Part
Part III, Operating Unit 3

Description of Modification:

Addendum J, §J.3:

J.3 IMPLEMENTATION OF THE PLAN

In accordance with [WAC 173-303-360\(2\)\(b\)](#) the BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED shall use the following guidelines to determine if an event has met the requirements of [WAC 173-303-360\(2\)\(d\)](#):

1. The event involved an unplanned spill, release, fire, or explosion,
AND
- 2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable.), or
- 2.b The unplanned fire or explosion occurred at the ETF/LERF or transportation activity subject to RCRA contingency planning requirements,
AND
3. Time-urgent response from an emergency services organization was required to mitigate the event or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED shall determine, in consultation with the site contractor environmental single point-of-contact, if notification to the Washington State Department of Ecology (Ecology) is needed to meet [WAC 173-303-360\(2\)\(d\)](#) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02), Section 4.2.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from Hanford Patrol, Hanford Fire Department, or ambulance units is required, the Hanford Emergency Response Number (911 from site office phones/373-0911 from cellular phones) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the ETF/LERF, the POC business number is 373-3800.

WAC 173-303-830 Modification Class

Class 1

Class ¹1

Class 2

Class 3

Please mark the Modification Class:

X

Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d

Enter wording of WAC 173-303-830, Appendix I Modification citation:

B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan

Modification Approved/Concur ☒ Yes ☐ Denied (state reason below)

Reason for denial:

KAC

Reviewed by Ecology:

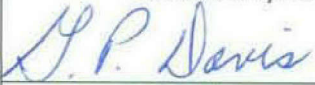
G. P. Davis

G. P Davis

8-30-10

Date

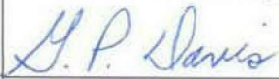
Hanford Facility RCRA Permit Modification Notification Form														
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3													
Description of Modification: Addendum J, §J.3.1.1: J.3.1.1 Evacuation <p>The objective of a facility evacuation order is to limit personnel exposure to hazardous materials or dangerous/mixed waste by increasing the distance between personnel and the hazard. The scope of the evacuation includes evacuation of the facility because of an event at the facility as well as evacuation of the facility in response to a site evacuation order. Evacuation will be directed by the BED when conditions warrant and will apply to all personnel not actively involved in the event response or emergency plan related activities.</p> <p>The BED will initiate the evacuation by directing an announcement be made to evacuate along with the evacuation location over a public address system, facility radios, and, as conditions warrant, by activating the 200 Area site evacuation alarms by calling the POC using 911 <u>from site office phones/373-0911 from</u> or 373-3800 (if using a cellular phones). Personnel proceed to a predetermined staging area (shown in Figure J.2), or other safe upwind location, as determined by the BED. The BED will determine the operating configuration of the facility and identify any additional protective actions to limit personnel exposure to the hazard.</p> <p>Emergency organization personnel or assigned operations personnel will conduct a sweep of occupied buildings to ensure that all non-essential personnel and visitors have evacuated. For an immediate evacuation, accountability will be performed at the staging area. The BED will assign personnel as accountability aides and staging managers with the responsibility to ensure that evacuation actions are taken at all occupied buildings at the ETF/LERF. All implementing actions executed by the aides/managers are directed by the emergency response procedures. When evacuation actions are complete, the aides/managers will provide a status report to the BED. The BED will provide status to the IC.</p>														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;">WAC 173-303-830 Modification Class</td> <td style="width: 12.5%; text-align: center; padding: 2px;">Class 1</td> <td style="width: 12.5%; text-align: center; padding: 2px;">Class 1¹</td> <td style="width: 12.5%; text-align: center; padding: 2px;">Class 2</td> <td style="width: 12.5%; text-align: center; padding: 2px;">Class 3</td> </tr> <tr> <td style="padding: 2px;">Please mark the Modification Class:</td> <td style="text-align: center; padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> </table>					WAC 173-303-830 Modification Class	Class 1	Class 1 ¹	Class 2	Class 3	Please mark the Modification Class:	X			
WAC 173-303-830 Modification Class	Class 1	Class 1 ¹	Class 2	Class 3										
Please mark the Modification Class:	X													
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan														
<table style="width: 100%;"> <tr> <td style="width: 60%; vertical-align: top; padding: 5px;"> Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: <i>MC</i> </td> <td style="width: 40%; vertical-align: top; padding: 5px;"> Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div> </td> </tr> </table>					Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: <i>MC</i>	Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div>								
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: <i>MC</i>	Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div>													

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3			
Description of Modification: Addendum J, §J.3.1.2: J.3.1.2 Take Cover <p>The objective of the take cover order is to limit personnel exposure to hazardous materials, or dangerous/mixed waste when evacuation is inappropriate or not practical. Evacuation might not be practical or appropriate because of extreme weather conditions or the material release might limit the ability to evacuate safely personnel.</p> <p>The BED will initiate the take cover by directing an announcement be made over the public address system, facility radios, and, as conditions warrant, by activating the 200 Area site take cover alarms by calling the POC using 911 <u>from site office phones/373-0911 from</u> or 373-3800 (if using a cellular phones). Actions to complete a facility take-cover will be directed by the emergency response procedure. Protective actions associated with operations include configuring, or shutting down, the ventilation systems. Determination of additional take cover response is based on plant operating configuration, weather conditions, amount and duration of release, and other conditions, as applicable to the event and associated hazard. As a minimum, personnel exposure to the hazard will be minimized. The BED will assign personnel as accountability aides with responsibility to ensure that take-cover actions are taken at all occupied buildings at the ETF complex. All implementing actions executed by the aides/managers are directed by the emergency response procedure. When take cover actions are complete, the aides/manager will provide the BED with a status report.</p>				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1 ¹	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: <i>FAE</i>		Reviewed by Ecology: <div style="text-align: center;">  G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div>		

Hanford Facility RCRA Permit Modification Notification Form														
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3													
Description of Modification: Addendum J, §J.3.2.4: J.3.2.4 Fire and/or Explosion In the event, of a fire, the discoverer activates a fire alarm (pull box); calls 911 from site office phones/373-0911 from or 373-3800 (if using a cellular phones) or verifies that the Hanford Emergency Response Number 911 has be been called. Automatic initiation of a fire alarm (through the smoke detectors, and sprinkler systems, and pull boxes) is also possible.														
<ul style="list-style-type: none"> Unless otherwise instructed, personnel shall evacuate the area/building by the nearest safe exit and proceed to the designated staging area for accountability. On actuation of the fire alarm, ONLY if time permits, personnel should shut down equipment, secure waste, and lock up classified materials (or hand carry them out). The alarm automatically signals the Hanford Fire Department. The BED proceeds directly to the ICP, obtains all necessary information pertaining to the incident, and sends a representative to meet Hanford Fire Department. The BED provides a formal turnover to the IC when the IC arrives at the ICP. The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste and mixed waste quantities released to the environment). If operations are stopped in response to the fire, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures. Hanford Fire Department firefighters extinguish the fire as necessary. 														
NOTE: Following a fire and/or explosion, WAC 173-303-640 (7) will be addressed for the ETF regarding fitness for use.														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">WAC 173-303-830 Modification Class</th> <th style="width: 10%;">Class 1</th> <th style="width: 10%;">Class ¹1</th> <th style="width: 10%;">Class 2</th> <th style="width: 10%;">Class 3</th> </tr> <tr> <td>Please mark the Modification Class:</td> <td style="text-align: center;">X</td> <td></td> <td></td> <td></td> </tr> </table>					WAC 173-303-830 Modification Class	Class 1	Class ¹ 1	Class 2	Class 3	Please mark the Modification Class:	X			
WAC 173-303-830 Modification Class	Class 1	Class ¹ 1	Class 2	Class 3										
Please mark the Modification Class:	X													
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan														
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; vertical-align: top;"> Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: KAC </td> <td style="width: 40%; vertical-align: top;"> Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div> </td> </tr> </table>					Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: KAC	Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div>								
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: KAC	Reviewed by Ecology: <div style="text-align: center;"> G. P. Davis </div> <div style="text-align: right;"> 8-30-10 Date </div>													

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3			
Description of Modification: Addendum J, §J.3.2.5: J.3.2.5 Hazardous Material, Dangerous and/or Mixed Waste Spill <p>Spills can result from many sources including process leaks, container spills or leaks, damaged packages or shipments, or personnel error. Spills of mixed waste are complicated by the need to deal with the extra hazards posed by the presence of Atomic Energy Act materials. These controls include containment berms, dedicated spill control sumps, remote gauges, and level indicators as well as spray shields on chemical pipe flanges. LPCS procedures provide alarm response and maintenance actions for leak detection equipment, surveillance of possible leak locations, and response actions for detected spills.</p> <ul style="list-style-type: none"> The discoverer notifies BED and initiates SWIMS response: <ul style="list-style-type: none"> Stops work Warns others in the vicinity Isolates the area Minimizes the spill if possible Requests the BED Secure ventilation If Operations are stopped, the BED ensures that the plant is put in a safe shutdown configuration. The BED determines if emergency conditions exist requiring response from the Hanford Fire Department based on classification of the spill and injured personnel, and evaluates need to perform additional protective actions. If the Hanford Fire Department resources are not needed, the spill is mitigated with resources identified in Section j.4 of this plan and proper notifications are made. If the Hanford Fire Department resources are needed, the BED calls 911 <u>from site office phones/373-0911 from or 373-3800 (if using a cellular phones)</u>. The BED sends a representative to meet the Hanford Fire Department. The BED provides a formal turnover to the IC when the IC arrives at the ICP. The BED informs the Hanford Site Emergency Response Organization as to the extent of the emergency (including estimates of dangerous waste and mixed waste quantities released to the environment). If operations are stopped in response to the spill, the BED ensures that systems are monitored for leaks, pressure buildup, gas generation, and ruptures. Hanford Fire Department stabilizes the spill. <p>NOTE: For response to leaks or spills and disposition of leaking or unfit-for-use tank systems, refer to WAC 173-303-640(7).</p>				
WAC 173-303-830 Modification Class Please mark the Modification Class:	Class 1	Class 1 ¹	Class 2	Class 3
	X			
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial: JAC		Reviewed by Ecology: <div style="display: flex; align-items: center;"> <div style="flex: 1;"> </div> <div style="flex: 1; text-align: right;"> 8-30-10 Date </div> </div> <div style="text-align: center; margin-top: 5px;">G. P Davis</div>		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility		Permit Part Part III, Operating Unit 3		
Description of Modification: Addendum J, §J.4: J.4 EMERGENCY EQUIPMENT Hanford Site emergency resources and equipment are described and listed in Permit Attachment 4, Hanford Emergency Management Plan, (DOE/RL-94-02), Appendix C. Emergency resources and equipment for the ETF/LERF are presented in this section.				
WAC 173-303-830 Modification Class		Class 1	Class ¹ 1	Class 2
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d				
Enter wording of WAC 173-303-830, Appendix I Modification citation: B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur Reason for denial:		Reviewed by Ecology:		
<input checked="" type="checkbox"/> Yes <i>KAC</i>		<i>G. P. Davis</i> G. P Davis		
		8-30-10 Date		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility		Permit Part Part III, Operating Unit 3		
Description of Modification: Addendum J, §J.4.1:				
J.4.1 Fixed Emergency Equipment				
TYPE	LOCATION	CAPABILITY		
Safety shower/ eye wash stations (ETF only)	1 - 2025E Rm 122 Decon Station 1 - 2025E South Wall of Process Area 1- <u>2025E Rm 131</u> 1 - 2025E Rm 134 1 - Outside south 2025E near acid/ caustic tanks 1 - Outside at Load-in station 1 - 2025E Rm 112 Laboratory	Assist in flushing chemicals/ materials from the body and/ or eyes and face of personnel.		
Wet pipe sprinkler (ETF only)	Throughout the ETF except those areas protected by preactive sprinklers	Assist in the control of a fire.		
Preactive sprinkler (ETF only)	Control room, communications room, electrical equipment room	Assist in the control of a fire. Maintained dry to prevent accidental damage to equipment		
Fire alarm pull boxes (ETF only)	All high traffic areas in operations administration and support areas, truck bay, and process area	Activate the local fire alarm		
E-lights	Throughout ETF	1 hour temporary lighting		
WAC 173-303-830 Modification Class		Class 1	Class ¹ 1	Class 2
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d				
Enter wording of WAC 173-303-830, Appendix I Modification citation:				
B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur Reason for denial:		Reviewed by Ecology:		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below)		 G. P Davis		
		8-30-10 Date		

Hanford Facility RCRA Permit Modification Notification Form				
Unit: Liquid Effluent Retention Facility & 200 Area Effluent Treatment Facility	Permit Part Part III, Operating Unit 3			
Description of Modification: Addendum J, §J.4.5:				
J.4.5 Spill Control and Containment Supplies				
SPILL KITS AND SPILL CONTROL EQUIPMENT				
TYPE	LOCATION	CAPABILITY		
Spill bags, drums, carts, etc.	4 – 2025E in process area <u>1 – TEDF 6653 Disposal Building</u> 1 – 2025E upper level process area 1 – 2025E Rm 125A 1 – 2025ED Load-In Station CONEX	Support containment and cleanup of hazardous material spills		
Spill response cabinet	1 – 2025E Rm 122 2 – 90-day storage CONEX East of 2025E building <u>1 – TEDF 6653 Disposal Building</u> 1 – MO-727 Change Trailer 1 – outside southeast side of 2025E	Support equipment for spill response		
WAC 173-303-830 Modification Class		Class 1	Class ¹ 1	Class 2
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d				
Enter wording of WAC 173-303-830, Appendix I Modification citation:				
B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan				
Modification Approved/Concur <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial:		Reviewed by Ecology: G. P. Davis		
		8-30-10 Date		

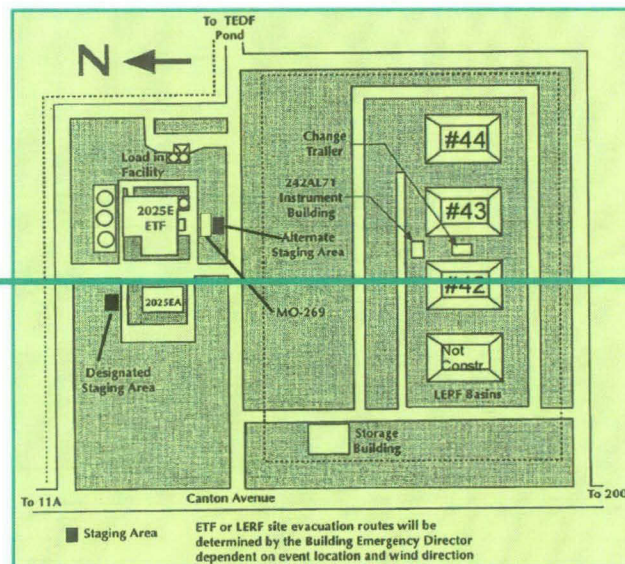
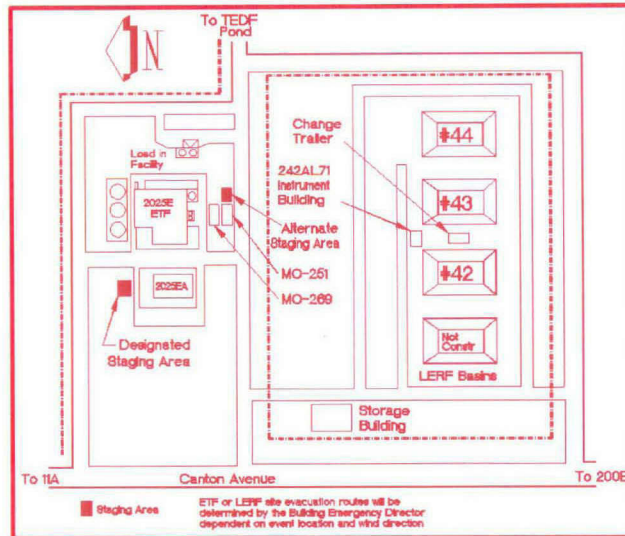
Hanford Facility RCRA Permit Modification Notification Form

Unit:
Liquid Effluent Retention Facility &
200 Area Effluent Treatment Facility

Permit Part
Part III, Operating Unit 3

Description of Modification:
Addendum J, Figure J.2:

Figure J.2. LERF and 200 Area ETF Site Plan



WAC 173-303-830 Modification Class

Class 1

Class 1

Class 2

Class 3

Please mark the Modification Class:

X

Enter relevant WAC 173-303-830, Appendix I Modification citation number: B.6.d

Enter wording of WAC 173-303-830, Appendix I Modification citation:

B.6.d. Contingency plan, Changes in name, address, or phone number of coordinators or other persons or agencies identified in the plan

Modification Approved/Concur



Yes



Denied (state reason below)

Reason for denial:

Reviewed by Ecology:

G. P. Davis

G. P Davis

8-30-10

Date

Hanford Facility RCRA Permit Modification
Part III, Operating Unit 11
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

Remove and replace the following sections for Part III, Operating Unit 3:

- Remove Permit Conditions dated June 30, 2009 and replace with Permit Conditions dated September 30, 2010

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PART III, OPERATING UNIT GROUP 3 PERMIT CONDITIONS

Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

UNIT DESCRIPTION:

The Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility (LERF and 200 Area ETF) consists of an aqueous waste treatment system that provides storage and treatment for a variety of aqueous mixed waste located in the 200 East Area.

This document sets forth the operating conditions for the LERF and 200 Area ETF.

Operating Unit Group 3:

Chapter 1.0 Part A Form, dated October 1, 2008
Chapter 3.0 Waste Analysis Plan, dated June 30, 2007
Chapter 4.0 Process Information, dated December 31, 2007
Chapter 5.0 Groundwater Monitoring (PNNL-11620 & WHC-SD-EN-AP-024), dated June 30, 2008
Chapter 6.0 Procedures to Prevent Hazards, dated June 30, 2007 (also refer to Permit Attachment 33, §6.1)
Addendum J Contingency Plan, dated September 30, 2010
Chapter 8.0 Personnel Training, dated June 30, 2008
Chapter 11.0 Closure and Post Closure Requirements, dated October 2006
Chapter 12.0 Reporting and Recordkeeping (refer to Permit Attachment 33, Table 12.1)

III.15.A COMPLIANCE WITH UNIT SPECIFIC PERMIT CONDITIONS

III.15.A.1 The Permittees shall comply with all requirements set forth in the Hanford Facility RCRA Permit (Permit) as specified in Permit Attachment 3, Permit Applicability Matrix, including all approved modifications. All chapters, subsections, figures, tables, and appendices included in the following unit specific Permit Conditions are enforceable in their entirety.

III.15.A.2 In the event that the Part III, Operating Unit Group 3 Permit Conditions conflict with the Part I, Standard Conditions and/or Part II, General Facility Conditions of the Permit, the unit specific conditions for Operating Unit 3, LERF and 200 Area ETF prevail.

III.15.B UNIT SPECIFIC CONDITIONS

III.15.B.1 Portions of Permit Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02) that are not made enforceable by inclusion in the applicability matrix for that document are not made enforceable by reference in this document.

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2
3
4
5

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Hanford Facility RCRA Permit Modification Notification Forms

**Part III, Operating Unit 10
Waste Treatment and Immobilization Plant (WTP)**

PCNs for quarter ending September 30, 2010:

<u>PCN Number</u>	<u>Form Approval Date</u>	<u>Facility</u>
24590-HLW-PCN-ENV-06-007	7-16-10	HLW
24590-LAW-PCN-ENV-09-005	7-30-10	LAW
24590-PTF-PCN-ENV-08-028	7-7-10	PTF
24590-PTF-PCN-ENV-10-026	9-22-10	PTF
24590-WTP-PCN-ENV-08-001	9-20-10	WTP

<u>PCN Number</u>	<u>Form Denial Date</u>	<u>Facility</u>
24590-LAW-PCN-ENV-06-017	7-7-10	LAW

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Quarter Ending June 30, 2010

24590-HLW-PCN-ENV-06-007

Hanford Facility RCRA Permit Modification Notification Form**Part III, Operating Unit 10****Waste Treatment and Immobilization Plant**

Index

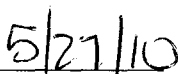
Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update Equipment Assembly Canister Decon Vessel 1, HDH-VSL-00002, and Equipment Assembly Canister
Decon Vessel 2, HDH-VSL-00004, in Appendix 10.6 of the Dangerous Waste Permit.

Submitted by Co-Operator:

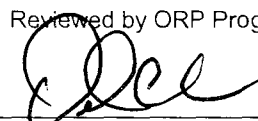
Reviewed by ORP Program Office:



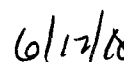
D. M. Busche



Date



D. Knutson



Date

Quarter Ending June 30, 2010

24590-HLW-PCN-ENV-06-007

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Permit Part:

Waste Treatment and Immobilization Plant**Part III, Operating Unit 10**Description of Modification:

The purpose of this Class 1 modification is to update Mechanical Drawings for the Equipment Assembly Canister Decon Vessel 1, HDH-VSL-00002, and Equipment Assembly Canister Decon Vessel 2, HDH-VSL-00004, in Appendix 10.6 of the Dangerous Waste Permit. The following Mechanical Drawings are submitted to replace the permitted drawings currently in Appendix 10.6.

Appendix 10.6

Replace:	24590-HLW-MV-HDH-P0004, Rev. 0	With:	24590-HLW-MV-HDH-00010001, Rev. 1 24590-HLW-MV-HDH-00010002, Rev. 1 24590-HLW-MV-HDH-00010003, Rev. 1
	24590-HLW-MV-HDH-P0005, Rev. 1		24590-HLW-MV-HDH-00010001, Rev. 1 24590-HLW-MV-HDH-00010002, Rev. 1 24590-HLW-MV-HDH-00010003, Rev. 1
	24590-HLW-MV-HDH-P0006, Rev. 0		24590-HLW-MV-HDH-00011001, Rev. 1 24590-HLW-MV-HDH-00011002, Rev. 1 24590-HLW-MV-HDH-00011003, Rev. 1
	24590-HLW-MV-HDH-P0007, Rev. 1		24590-HLW-MV-HDH-00011001, Rev. 1 24590-HLW-MV-HDH-00011002, Rev. 1 24590-HLW-MV-HDH-00011003, Rev. 1

The referenced mechanical drawings (24590-HLW-MV-HDH-P0004, 24590-HLW-MV-HDH-P0005, 24590-HLW-MV-HDH-P0006 and 24590-HLW-MV-HDH-P0007) have been superseded. The superseding drawings incorporate changes provided in applicable document change forms (e.g., DCN, SCN, SDDR, FCN, FCR, etc.) and changes associated with the resolution to comments on change documents since the issuance of the last revision of the permitted drawing. This modification requests Ecology approval and incorporation into the permit the drawings listed above (24590-HLW-MV-HDH-00010001 through -00010003, and 24590-HLW-MV-HDH-00011001 through -00011003). The new drawings are the result of ongoing design changes. The following identifies the significant types of changes to 24590-HLW-MV-HDH-P0004, 24590-HLW-MV-HDH-P0005, 24590-HLW-MV-HDH-P0006 and 24590-HLW-MV-HDH-P0007 that are documented on the new drawings:

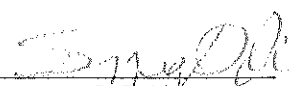
- Revised notes
- Incorporate changes from DCNs identified in notes
- Added drawings index
- Removed holds
- Provided additional detail views
- Incorporated vendor related changes
- Added nozzle identifiers and nozzle schedule (24590-HLW-MV-HDH-00010001 and 24590-HLW-MV-HDH-00011001)

The following is a list of outstanding change documents that have not been incorporated into this modification:

- None

Quarter Ending June 30, 2010

24590-HLW-PCN-ENV-06-007

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: Enter wording of WAC 173-303-830, Appendix I Modification citation: In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹ 1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."				
Modification Approved/Concur: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) <u>Reason for denial:</u>	Reviewed by Ecology:  S. Dahl Date 7/14/10			

24590-HLW-PCN-ENV-06-007 Drawings:

24590-HLW-MV-HDH-OOOI0001 Rev 1

24590-HLW-MV-HDH-OOOI0002 Rev 1

24590-HLW-MV-HDH-OOOI0003 Rev 1

24590-HLW-MV-HDH-OOOI0004 Rev 1

24590-HLW-MV-HDH-OOOI0005 Rev 1

24590-HLW-MV-HDH-OOOI0006 Rev 1



H

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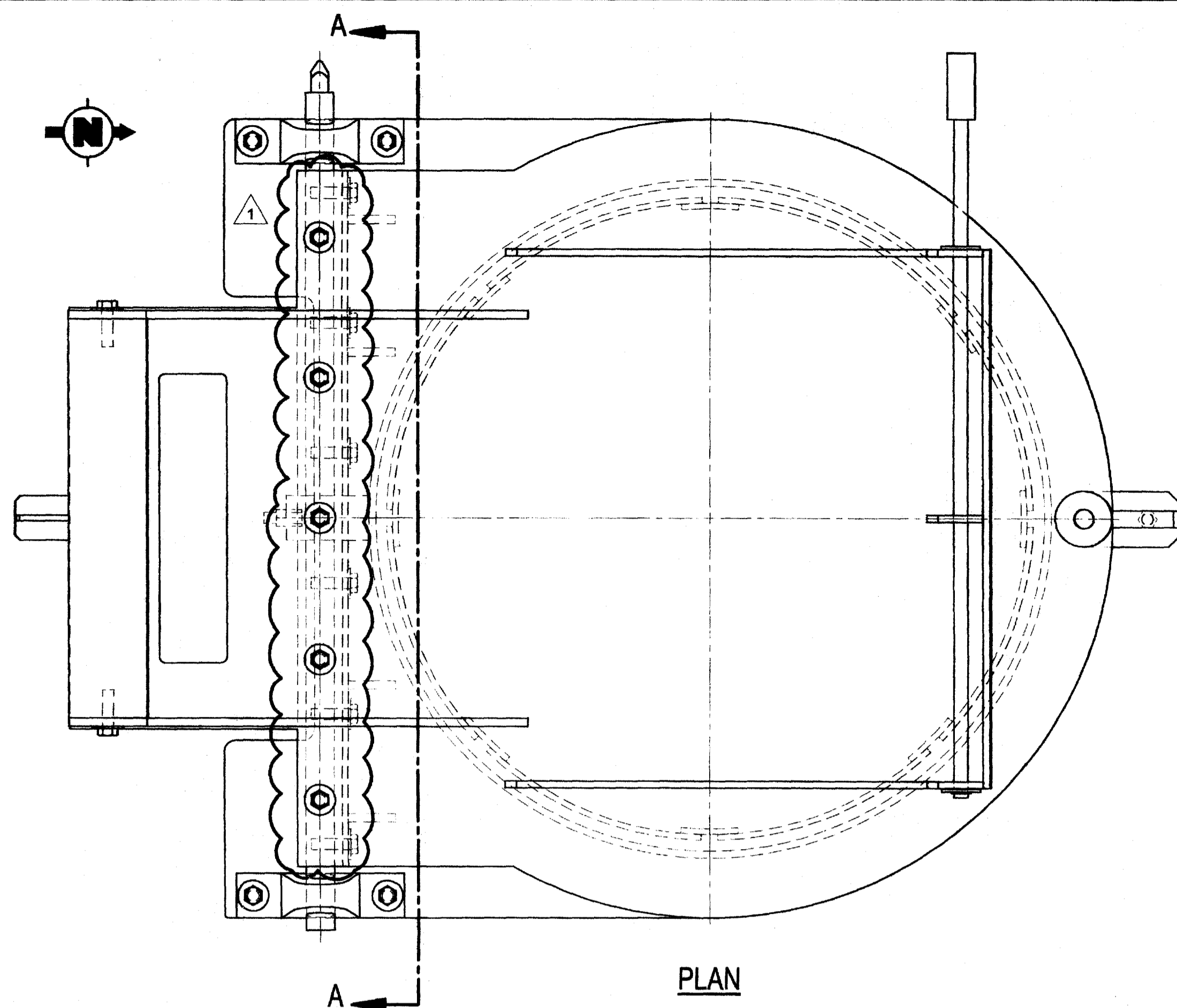
E

D

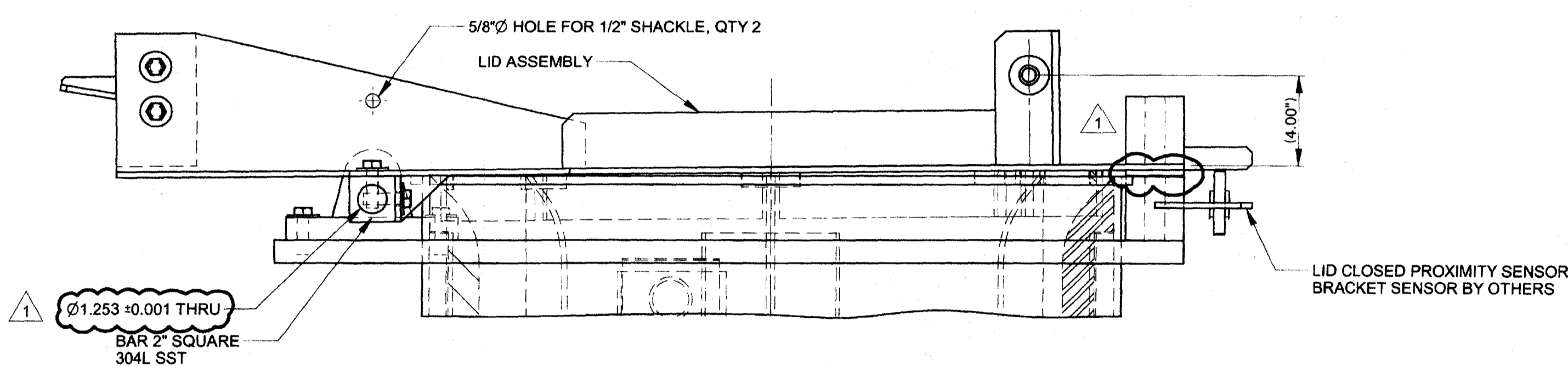
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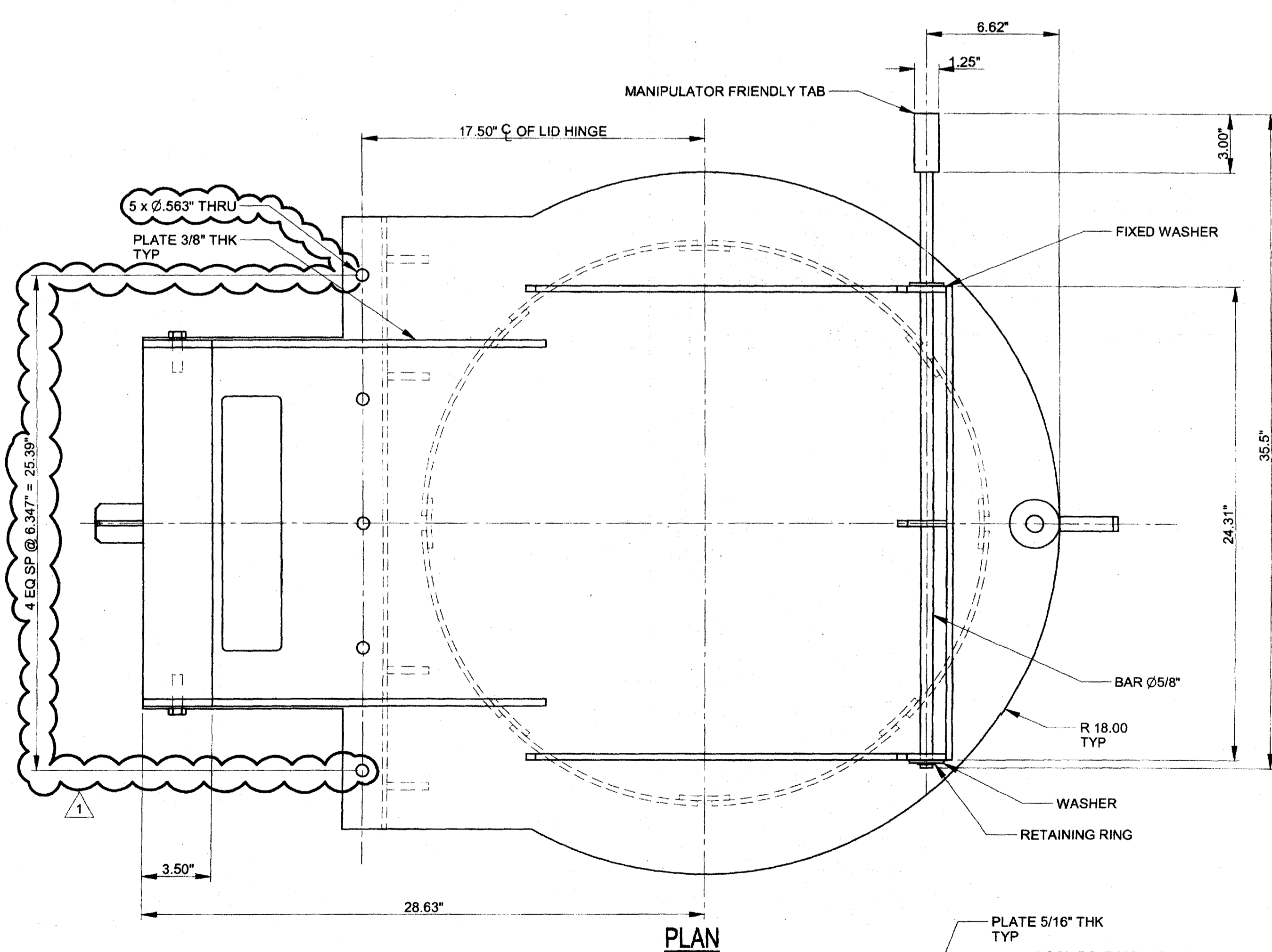
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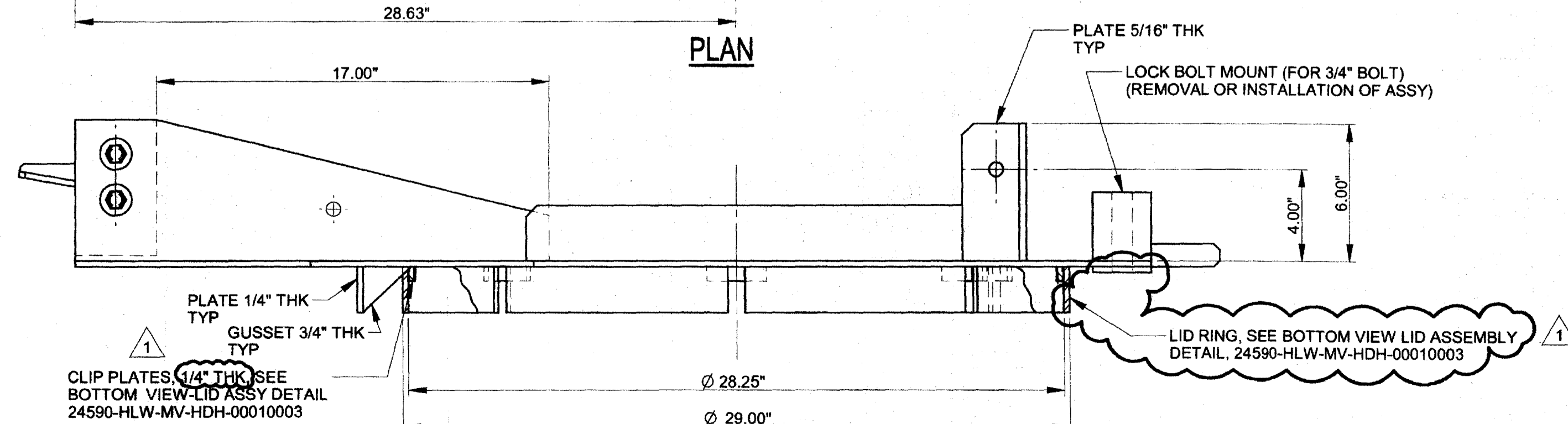
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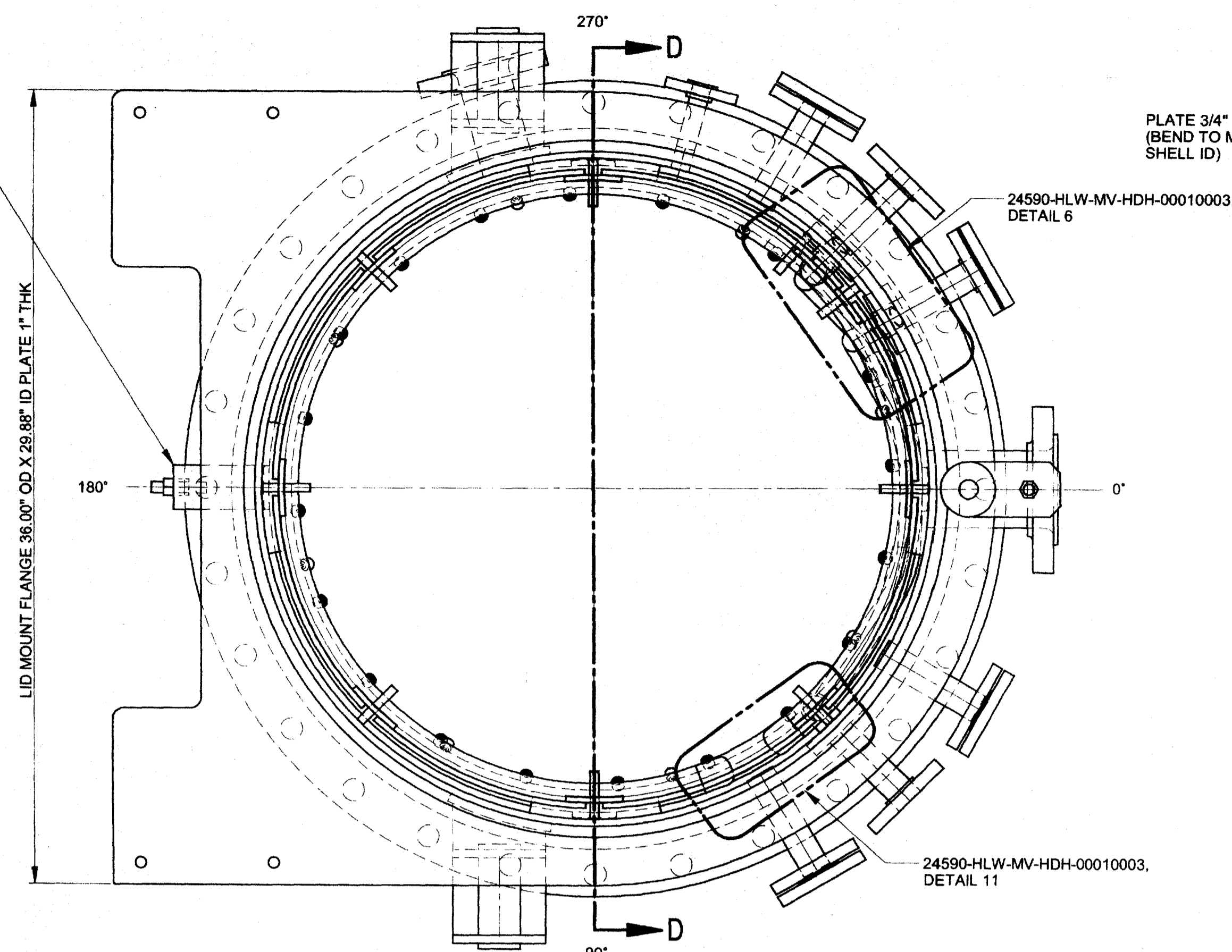
TOP OF REMOVABLE COIL ASSEMBLY DETAIL



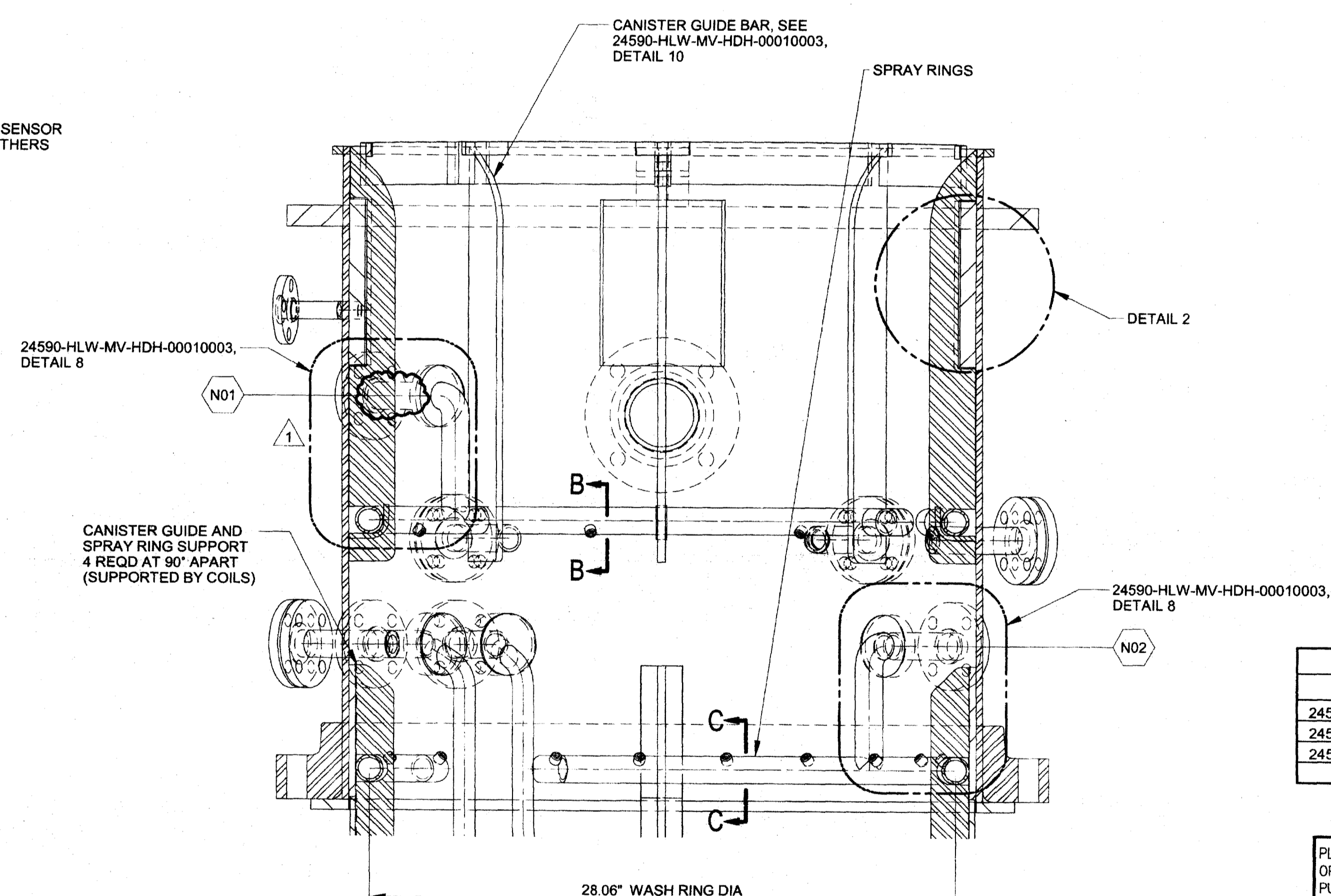
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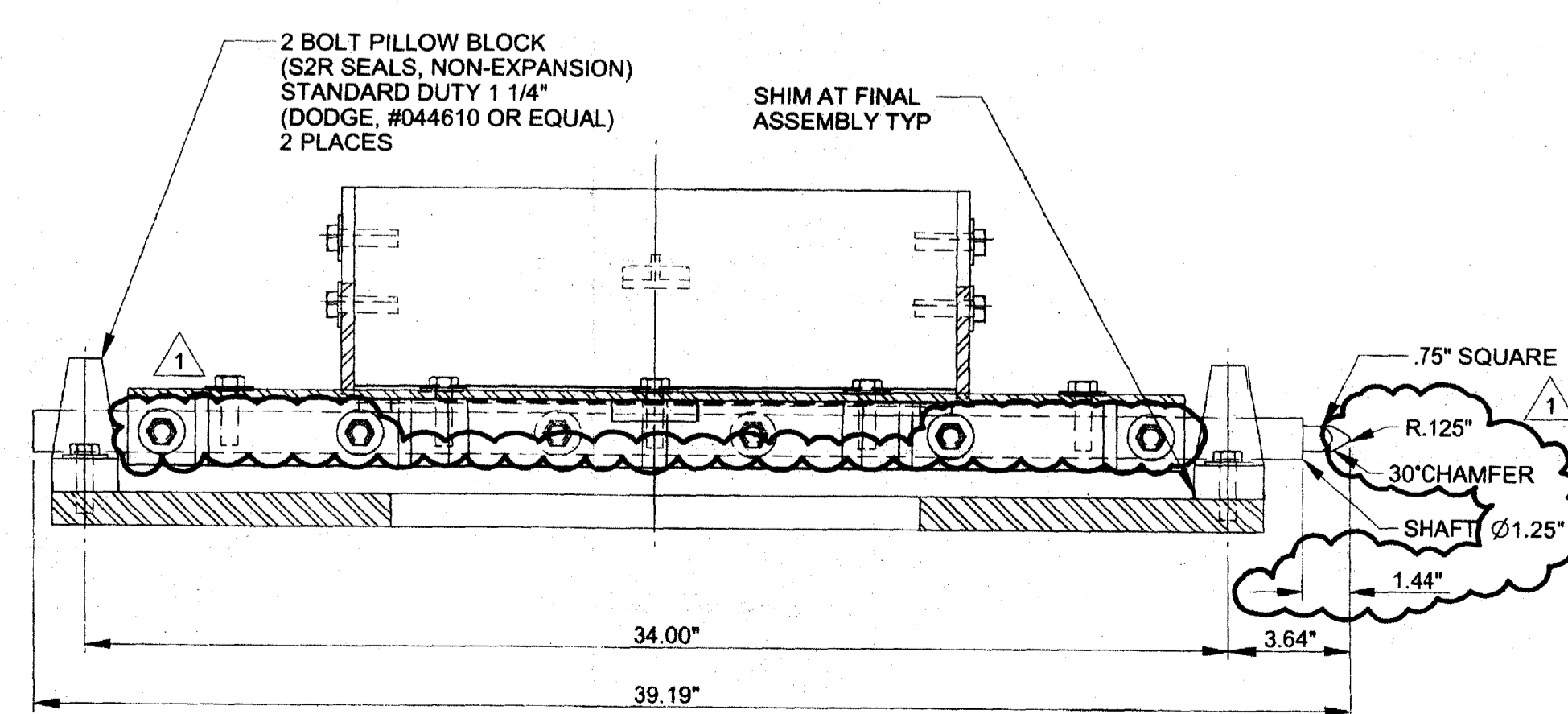
LID ASSEMBLY DIMENSIONED DETAIL



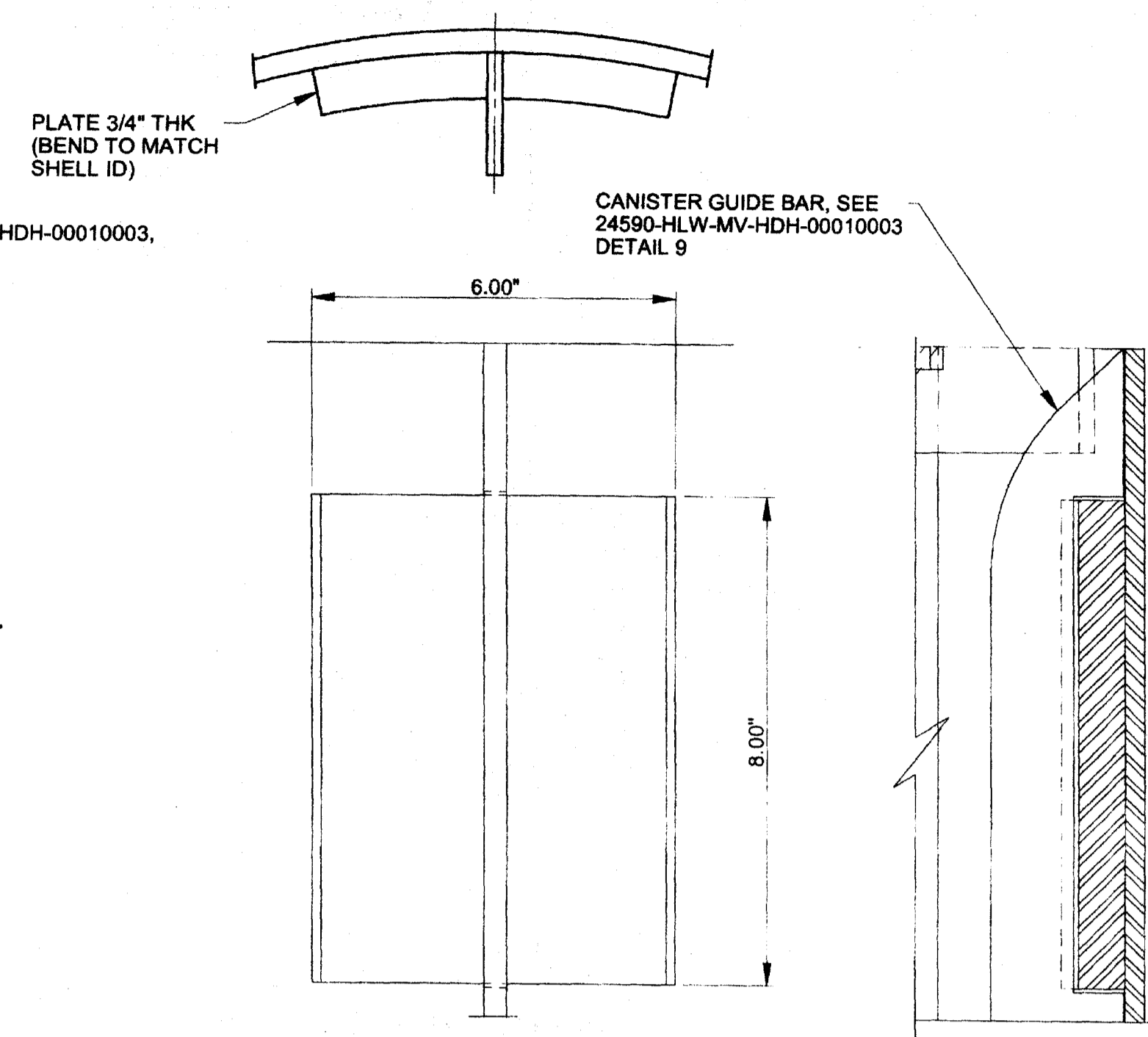
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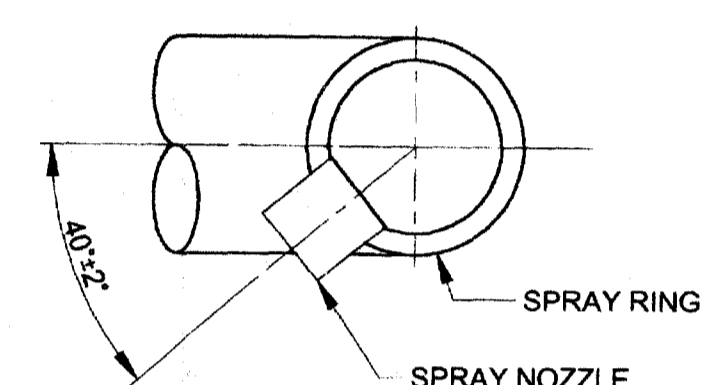
SECTION D-D



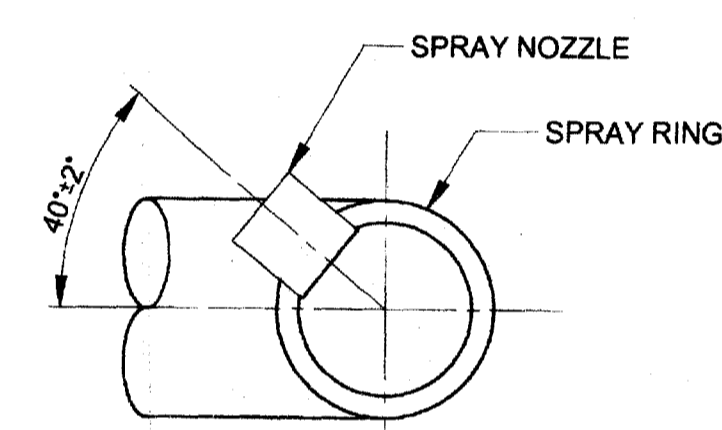
SECTION A-A



DETAIL 2



SECTION B-B



SECTION C-C

GENERAL NOTES:

- FOR GENERAL NOTES SEE SHEET 1
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
- 24590-HLW-MV-HDH-00010002 REV D SUPERSEDES 24590-HLW-MV-HDH-00004 REV 3, 24590-HLW-MV-HDH-00005 REV 2, 24590-HLW-MV-HDH-00004 REV 2 & 24590-HLW-MV-HDH-00005 REV 2.

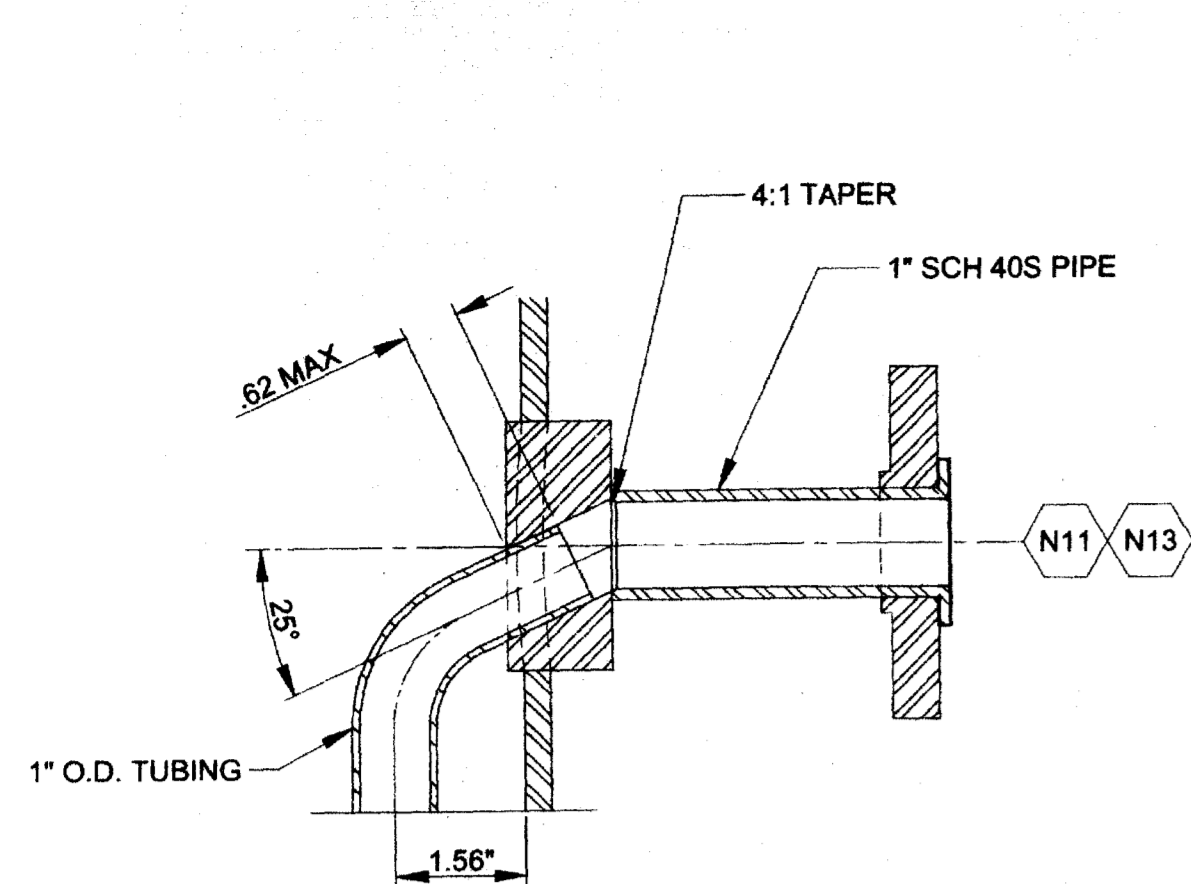
DRAWINGS INDEX

DWG NO	REV	TITLE
24590-HLW-MV-HDH-00010001	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 1 OF 3
24590-HLW-MV-HDH-00010002	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 2 OF 3
24590-HLW-MV-HDH-00010003	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 3 OF 3

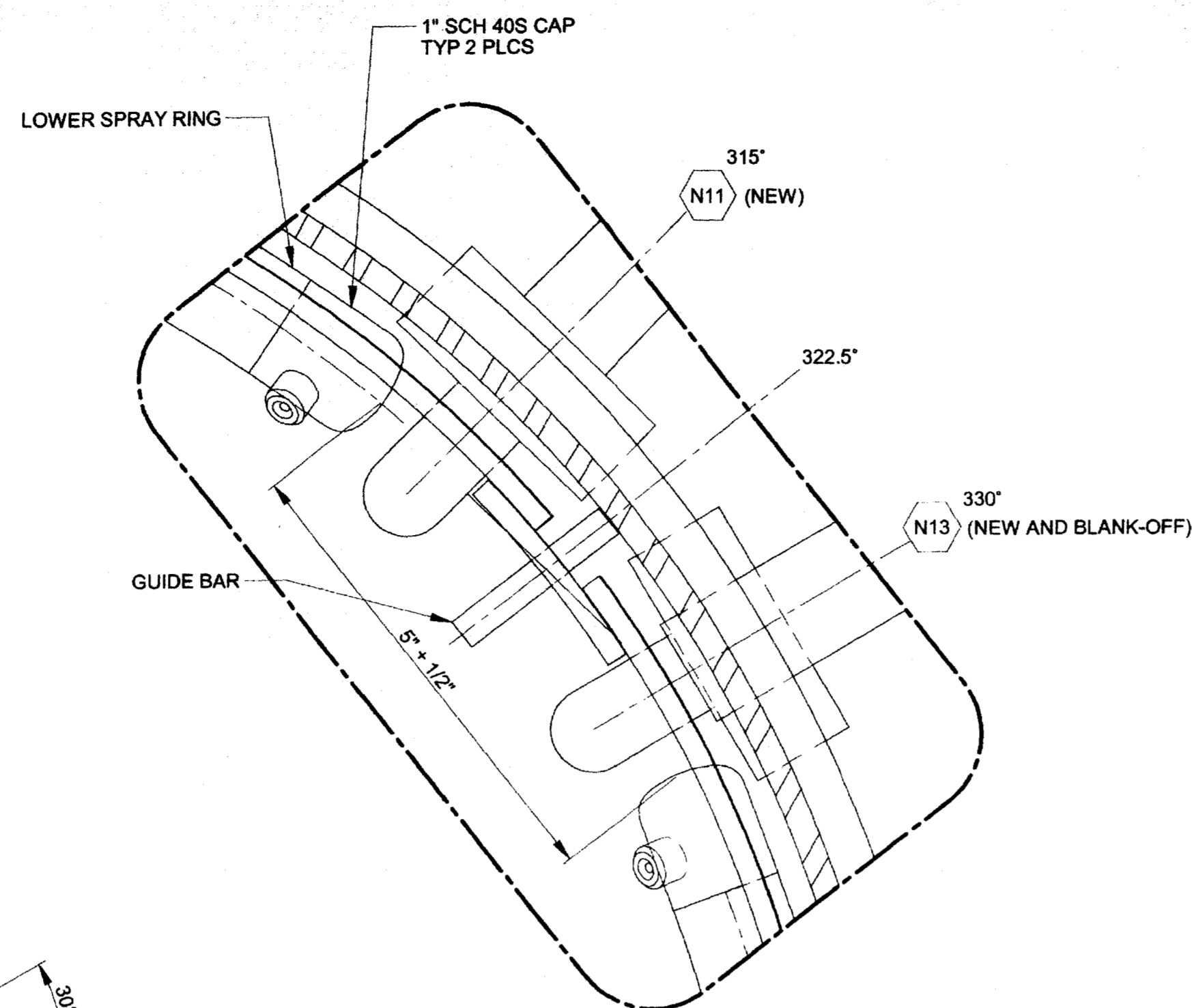
PLEASE NOTE THAT SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA) ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS THAT PURSUANT TO THE AEA IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

CM

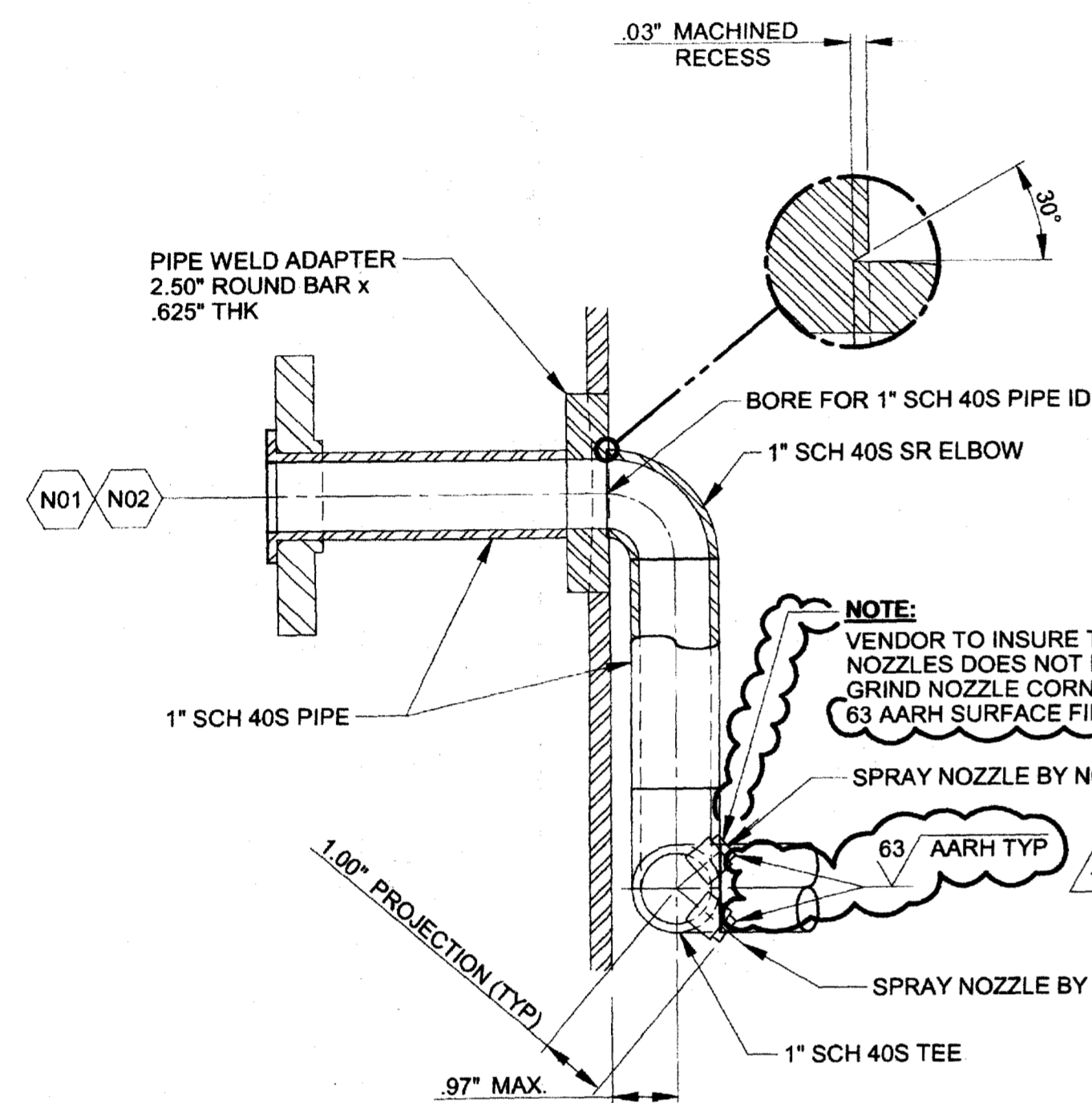
ISSUED BY RPP-WTP PDC ISSUE STAMP	PROJECT No. 24590 SITE HANFORD AREA 200-E BUILDING No. 30	DATE 4/23/09	REVISION HISTORY
ORIGINATOR BHARAT MAKADIA	CHECKER M A SEED	APPROVER J L JULYK	REVIEWER D BARTON
CONTENT APPLICABLE TO ALARA? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
ADR NO. 24590-WTP-ADR-44-03-008 REV. 2			
EENS SCREENING REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EENS INITIAL IF YES: <input checked="" type="checkbox"/> JLB			
SCALE: NONE			
24590-HLW-MV-HDH-00010002			



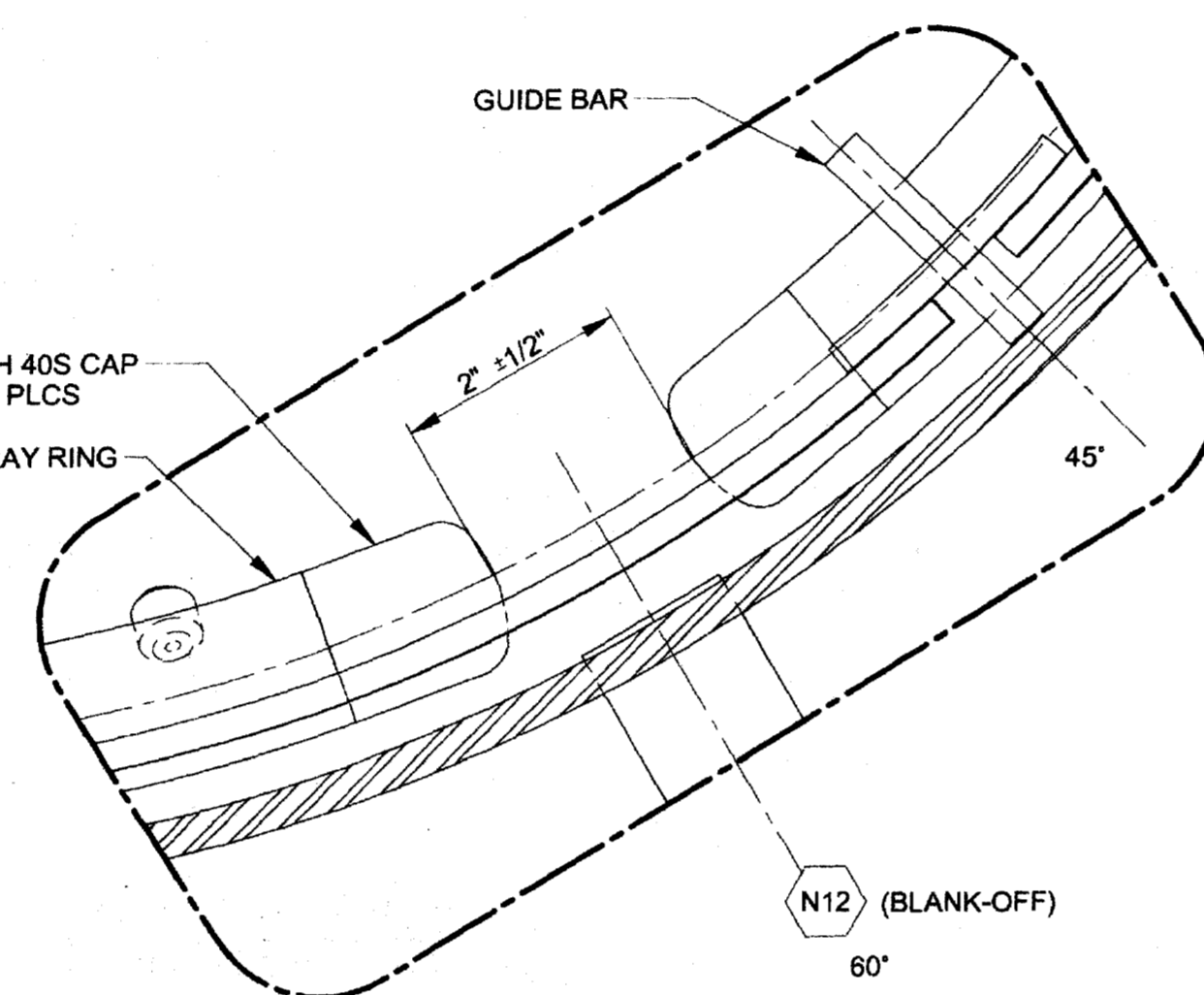
DETAIL 5
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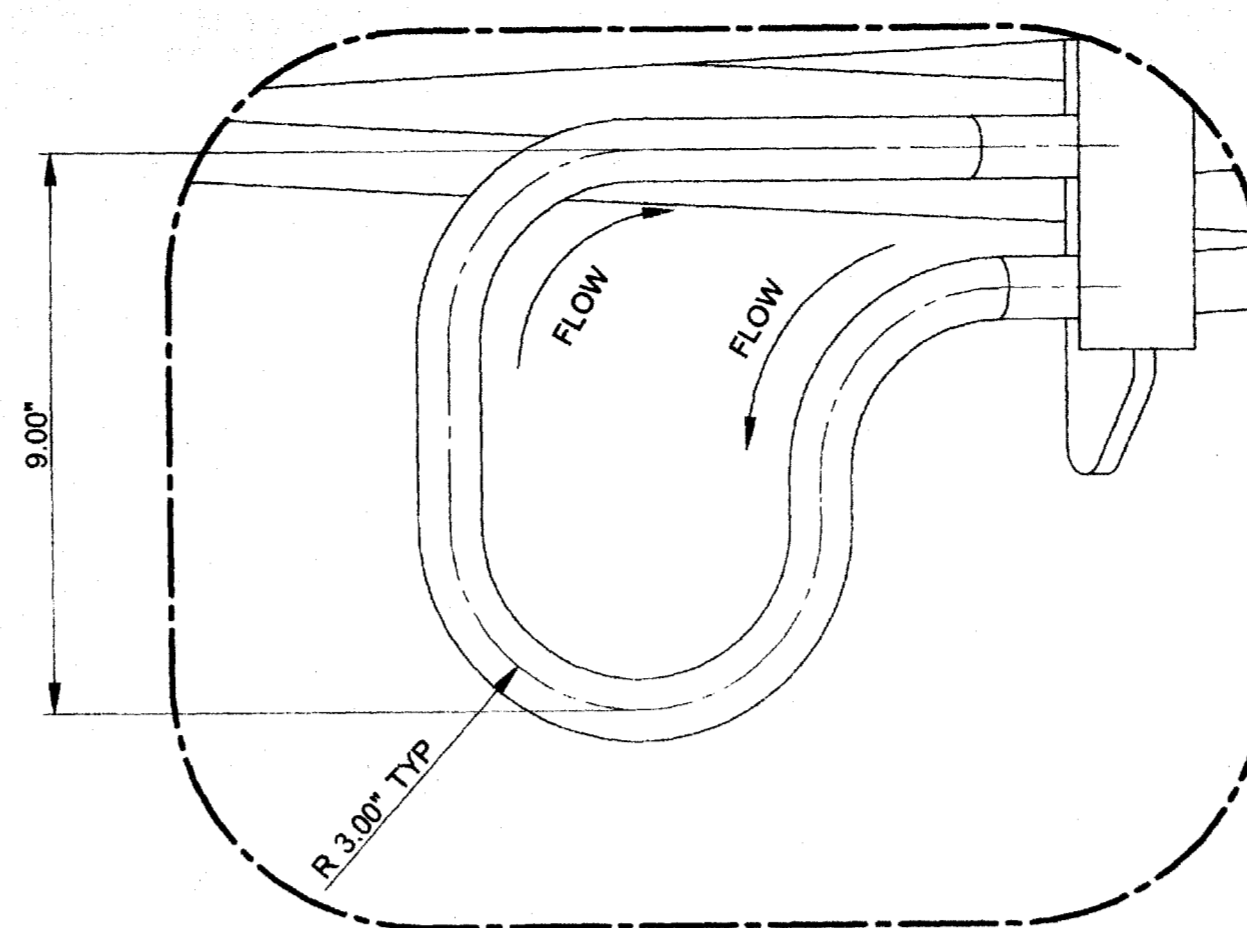
DETAIL 6
24590-HLW-MV-HDH-00010002



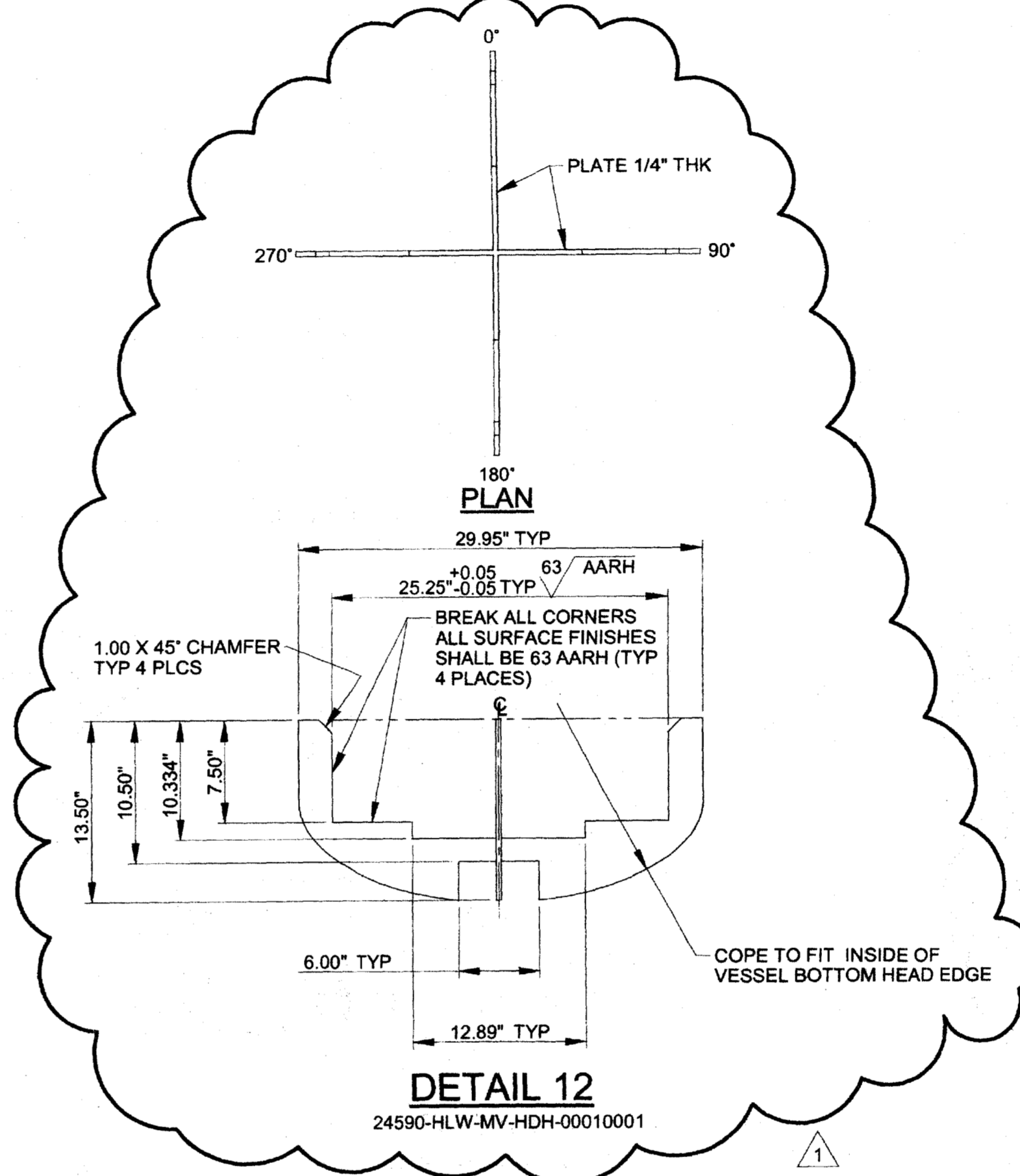
DETAIL 8
24590-HLW-MV-HDH-00010002



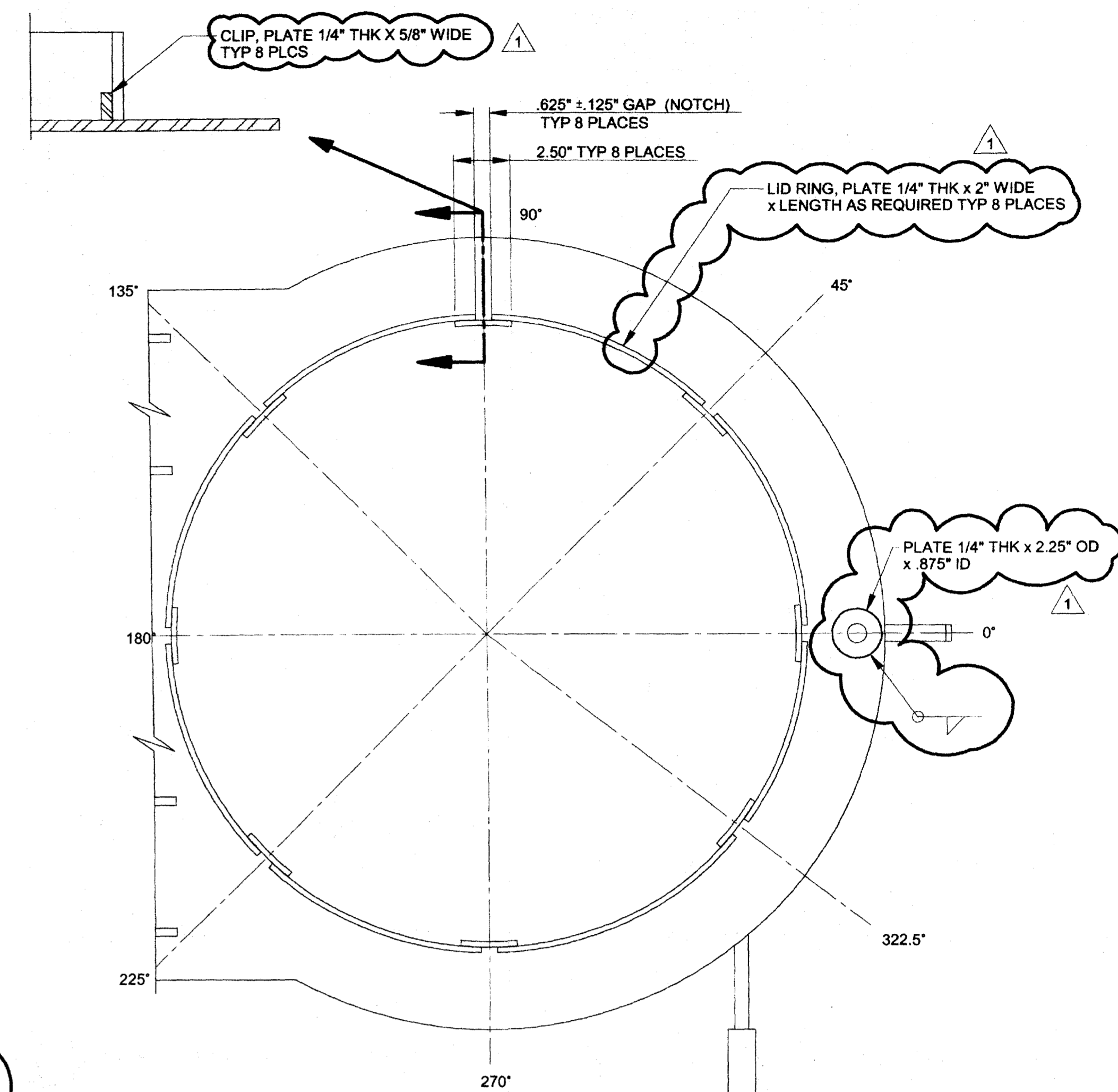
DETAIL 11
24590-HLW-MV-HDH-00010002



DETAIL 7
24590-HLW-MV-HDH-00010001



DETAIL 12
24590-HLW-MV-HDH-00010001



BOTTOM VIEW - LID ASSEMBLY DETAIL

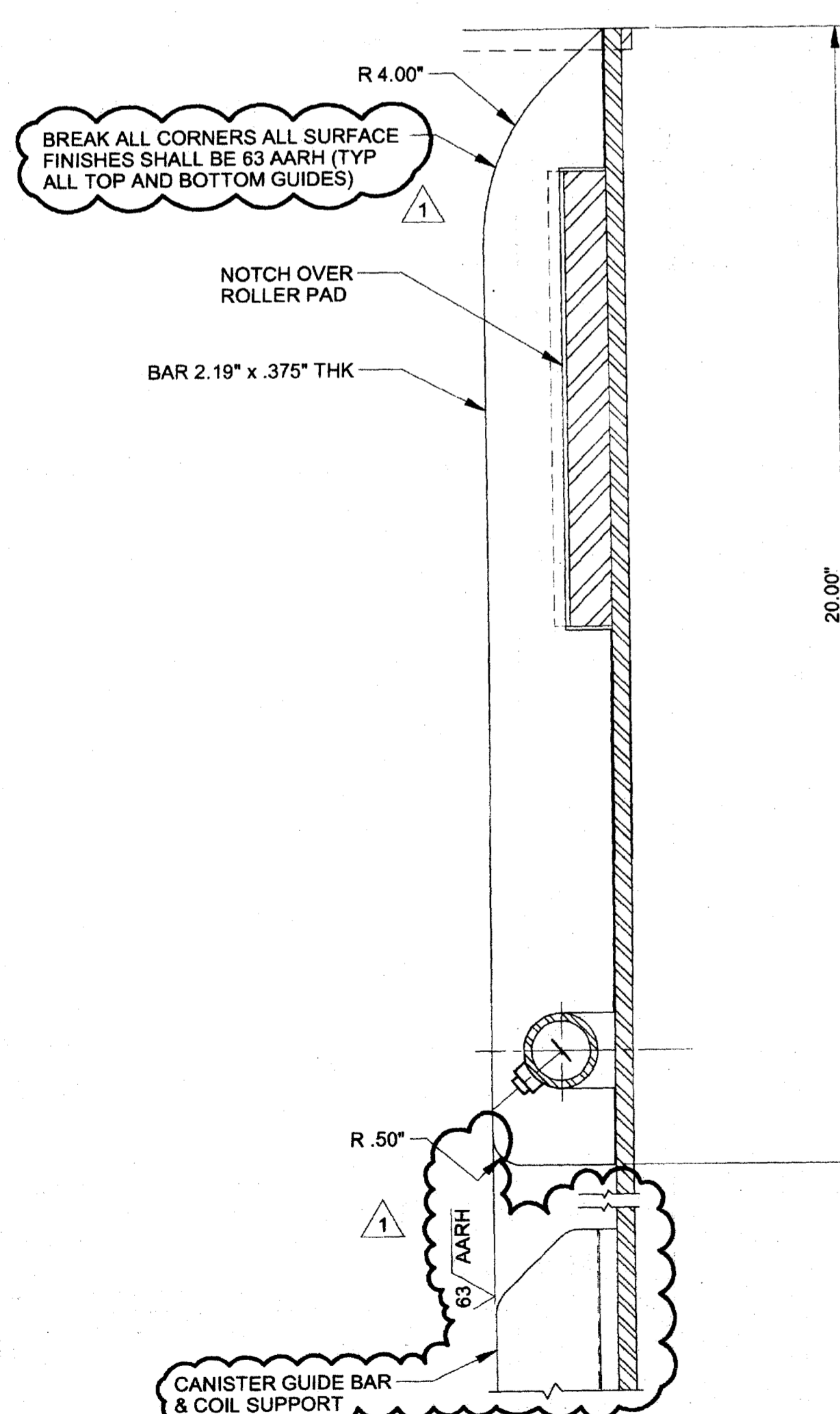
GENERAL NOTES:

- FOR GENERAL NOTES SEE SHEET 1
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
- 24590-HLW-MV-HDH-00010003 REV 0 SUPERSEDES 24590-HLW-MV-HDH-00004 REV 3, 24590-HLW-MV-HDH-00005 REV 2, 24590-HLW-MV-HDH-00004 REV 2 & 24590-HLW-MV-HDH-00005 REV 2.

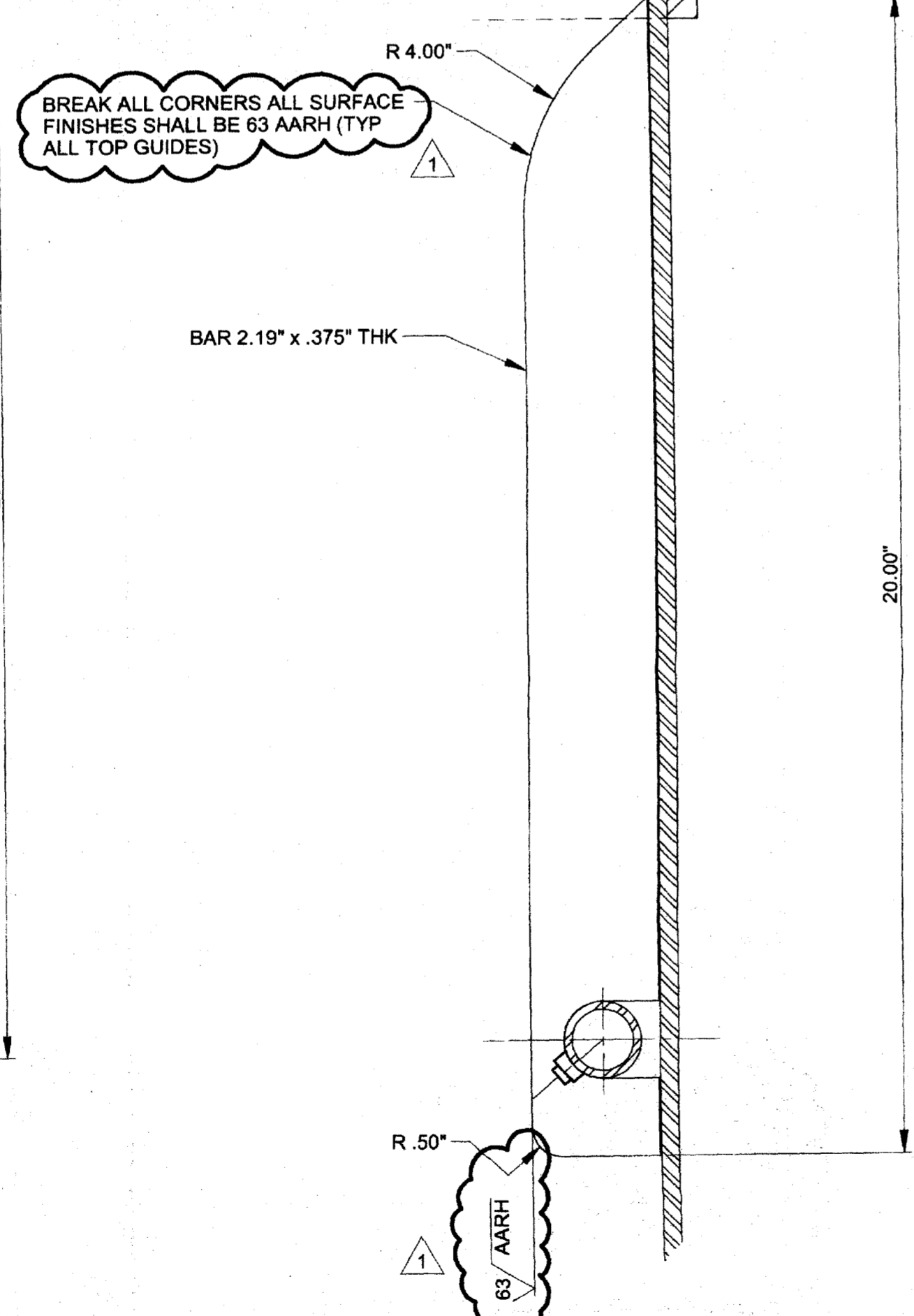
DRAWINGS INDEX

DWG NO	REV	TITLE
24590-HLW-MV-HDH-00010001	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 1 OF 3
24590-HLW-MV-HDH-00010002	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 2 OF 3
24590-HLW-MV-HDH-00010003	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 1 HDH-VSL-00002 SHEET 3 OF 3

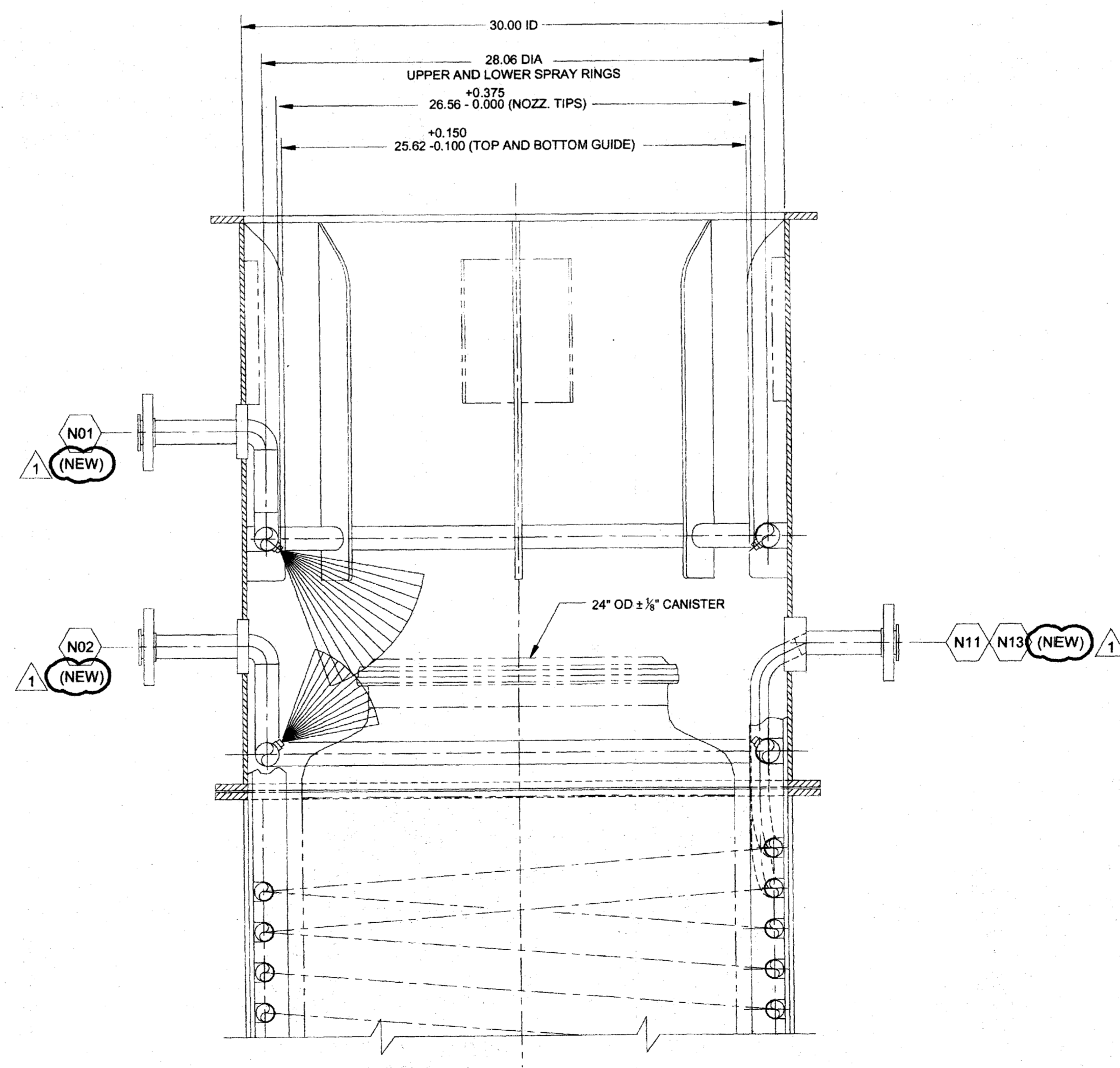
PLEASE NOTE THAT SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA) ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS THAT PURSUANT TO THE AEA IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL NUCLEAR AND BYPRODUCT MATERIALS AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.



DETAIL 9
LOCATED ON 0°, 90°, 180° AND 270°
24590-HLW-MV-HDH-00010002

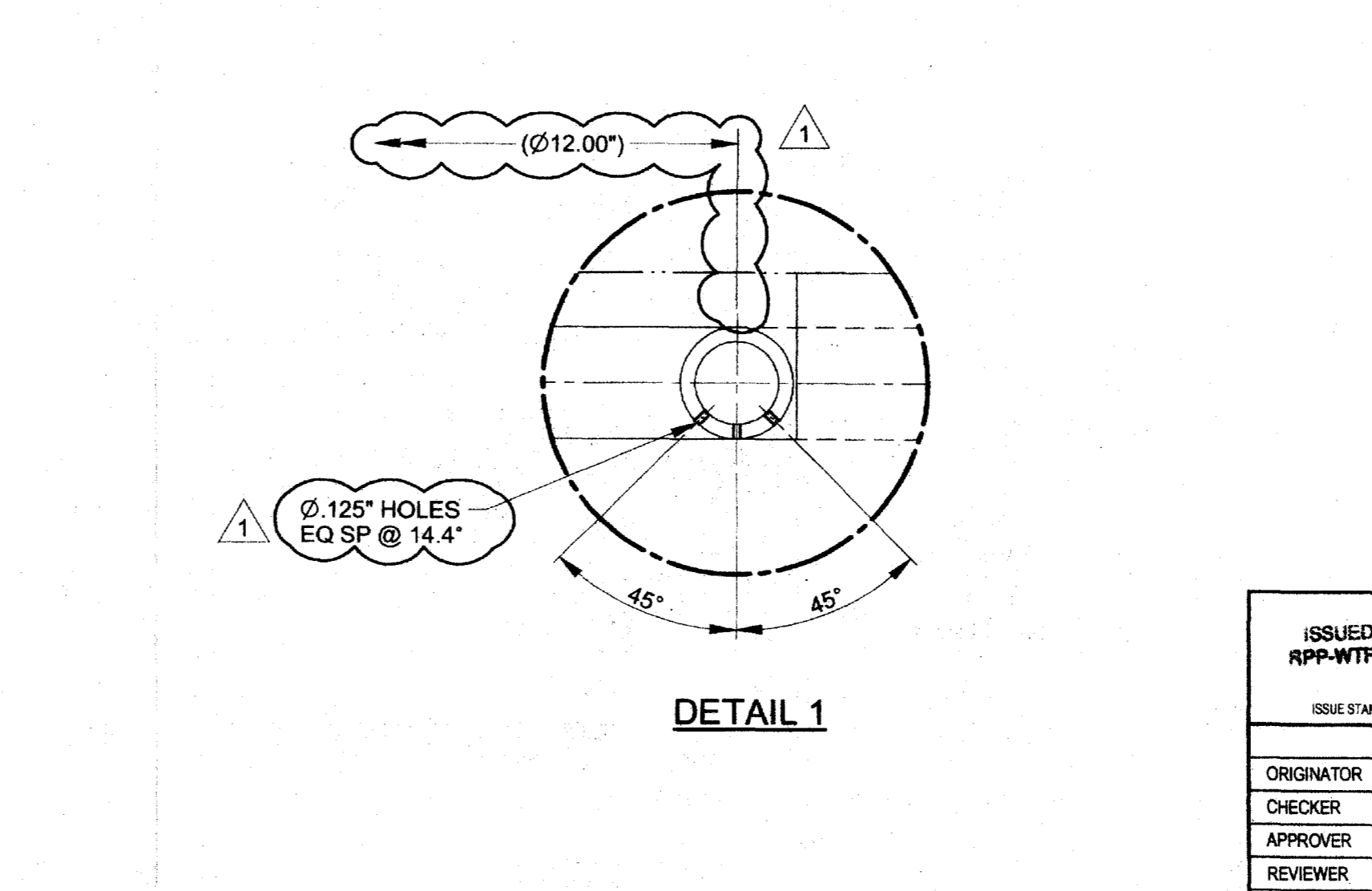
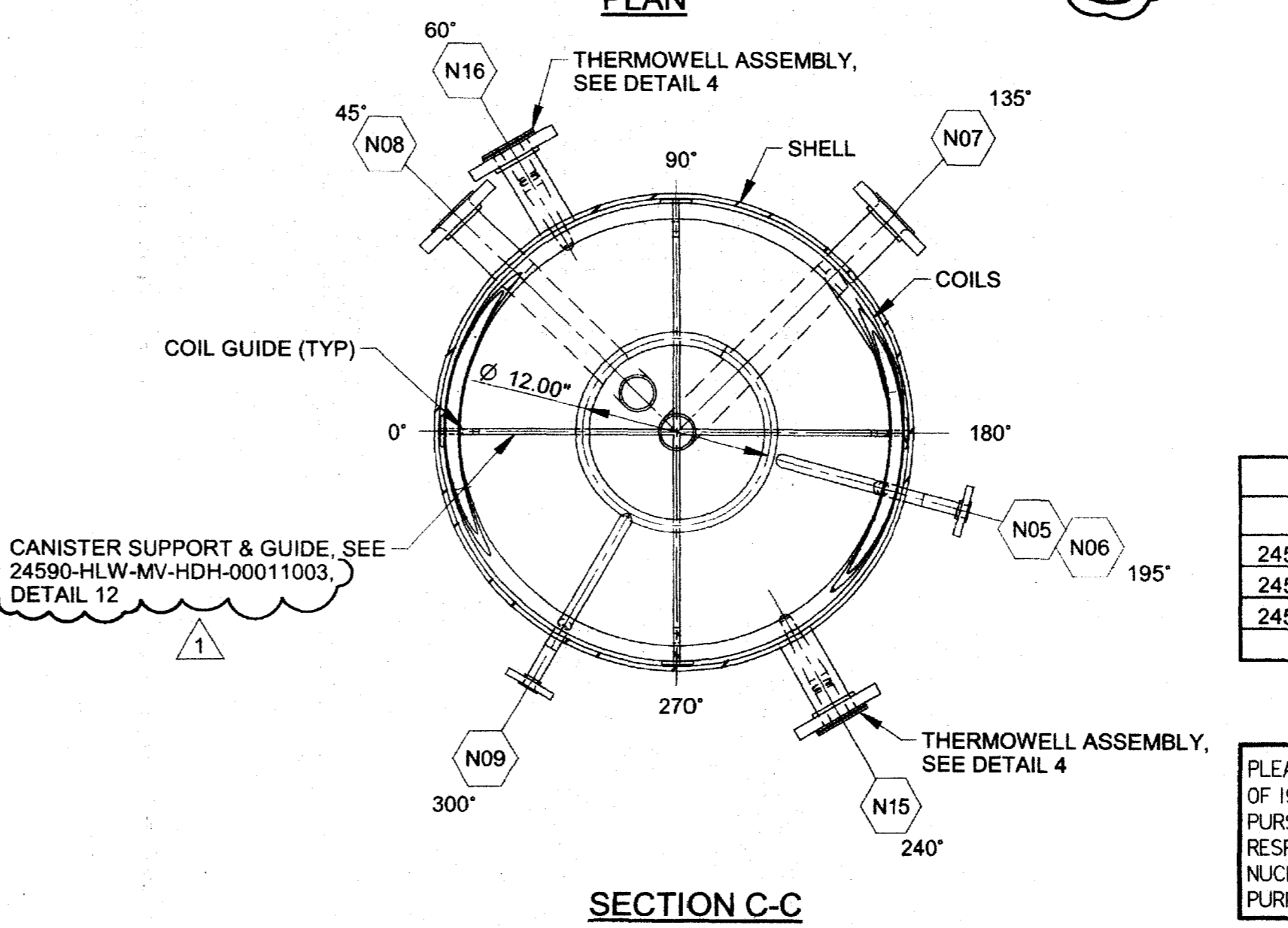
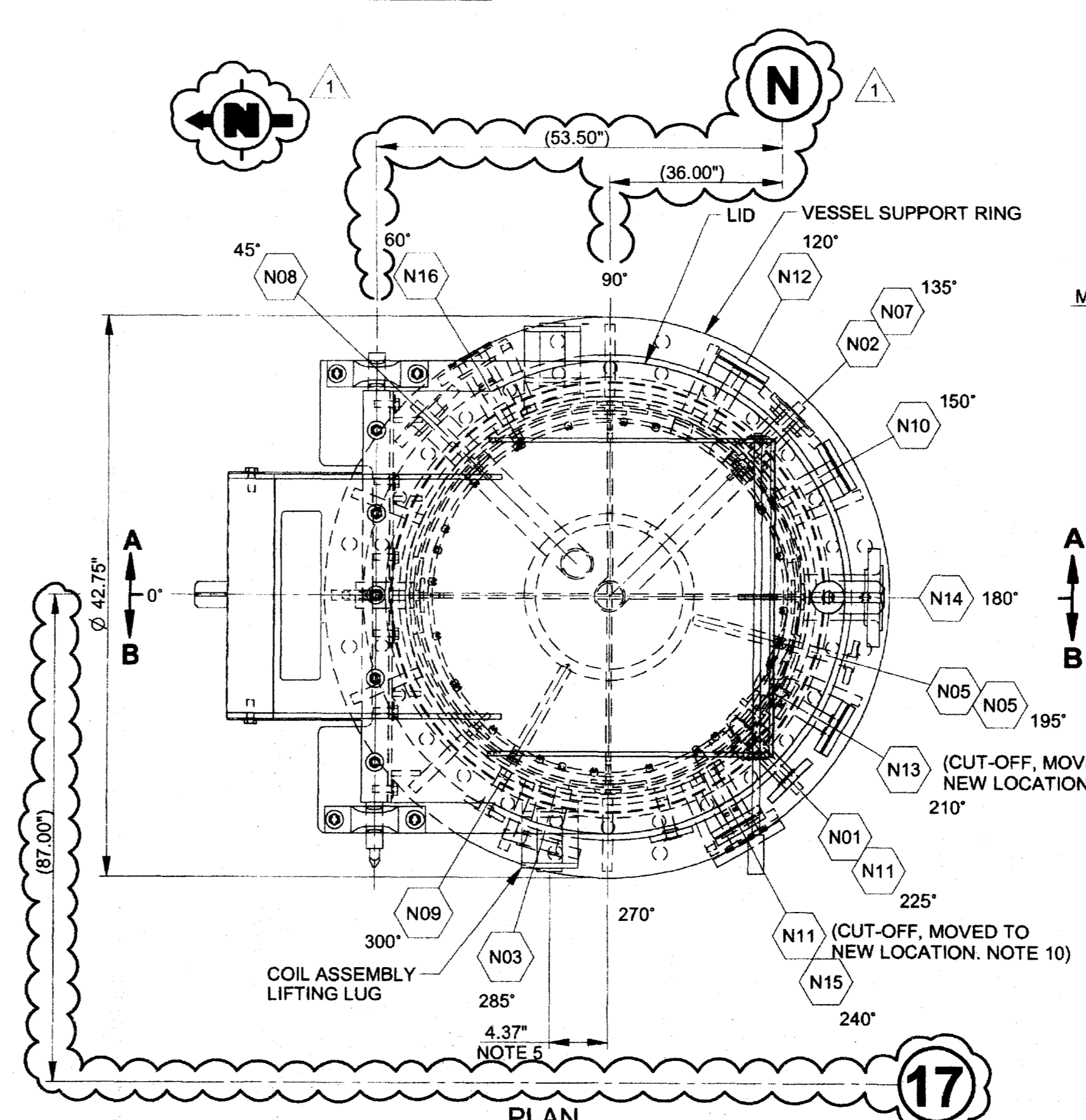
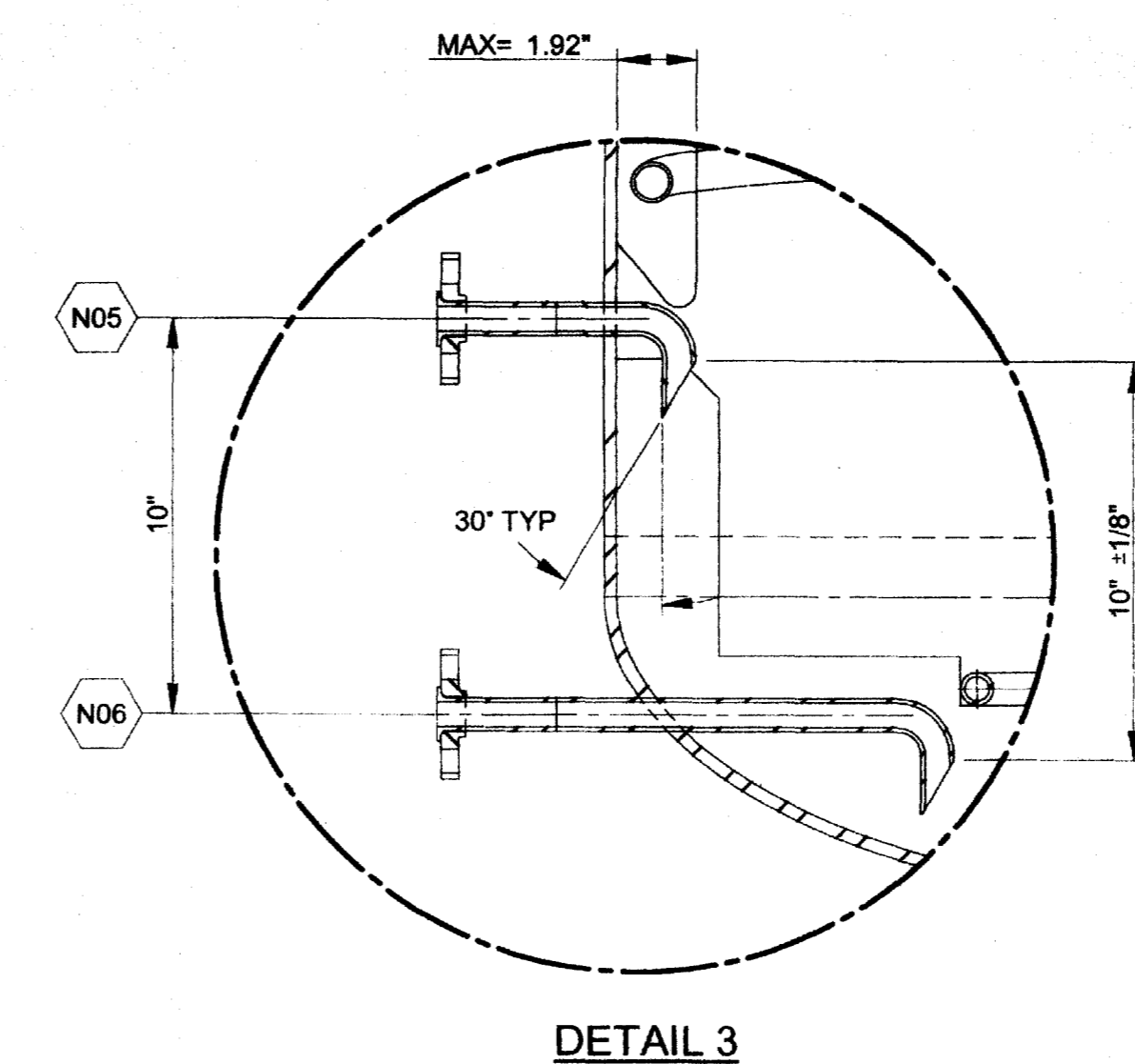
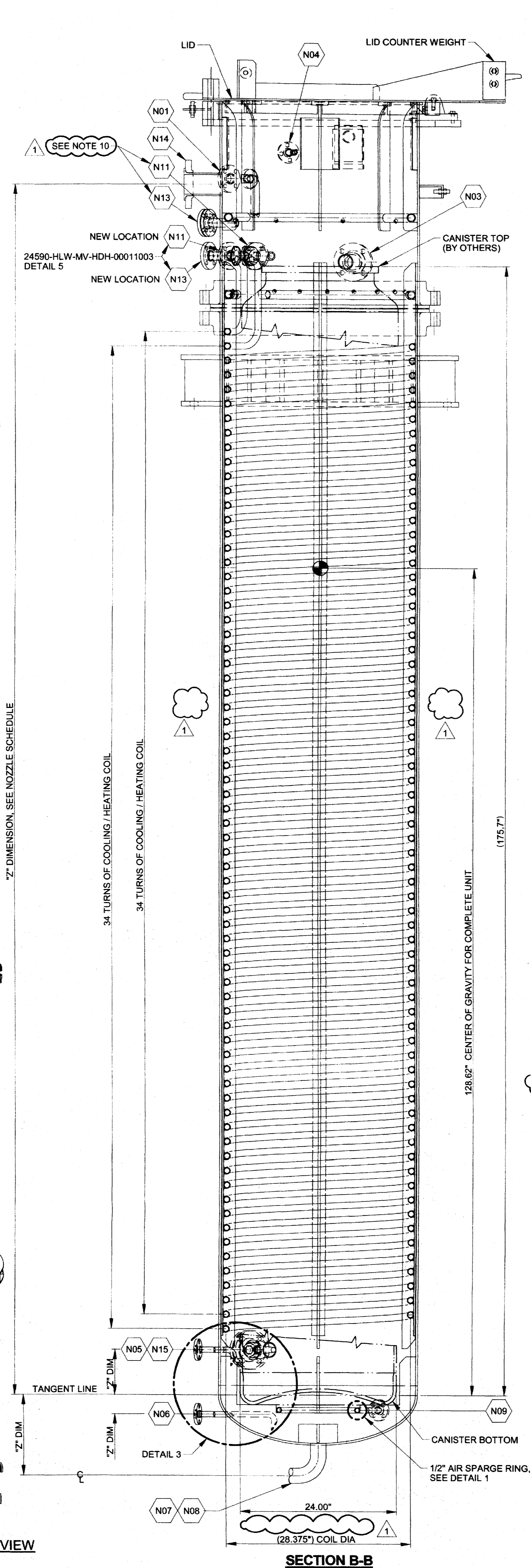
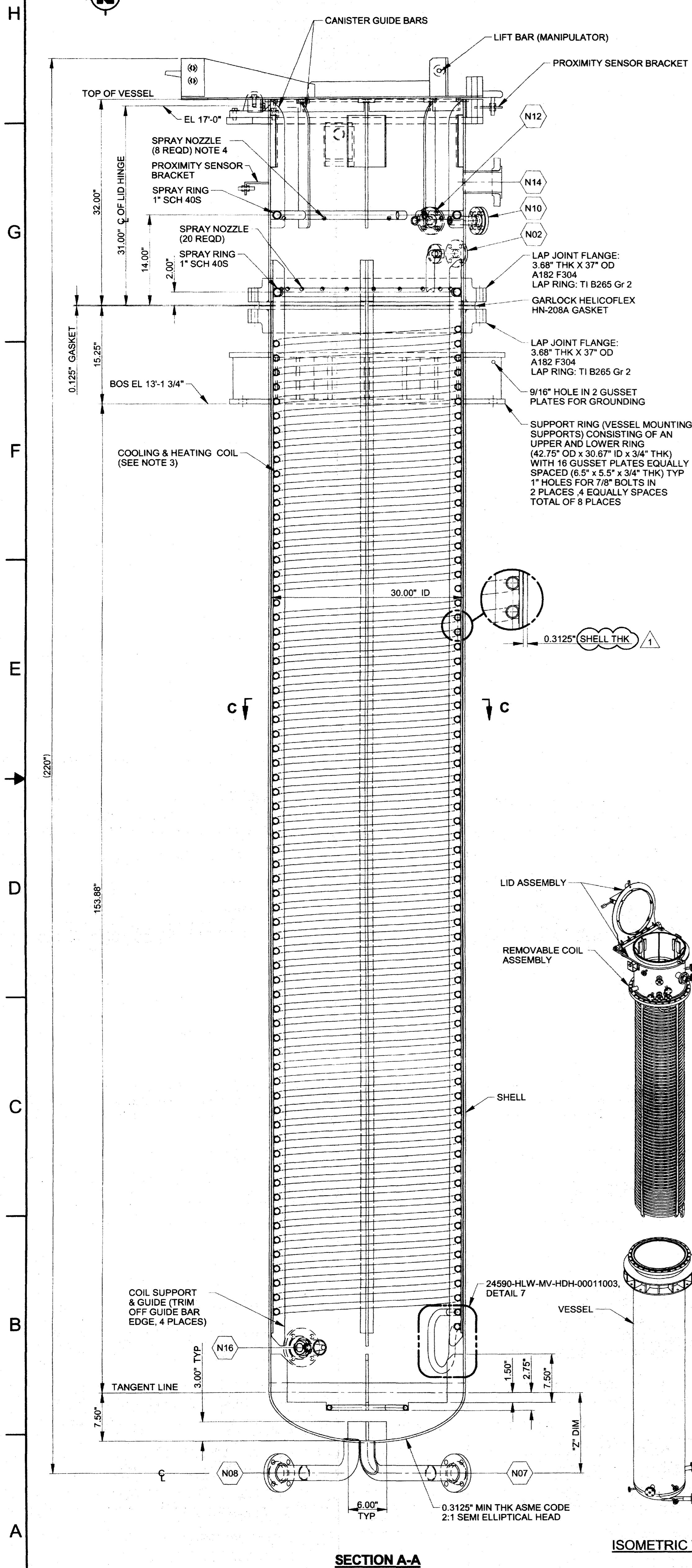


DETAIL 10
LOCATED ON 45°, 135°, 225° AND 322.5°
24590-HLW-MV-HDH-00010002

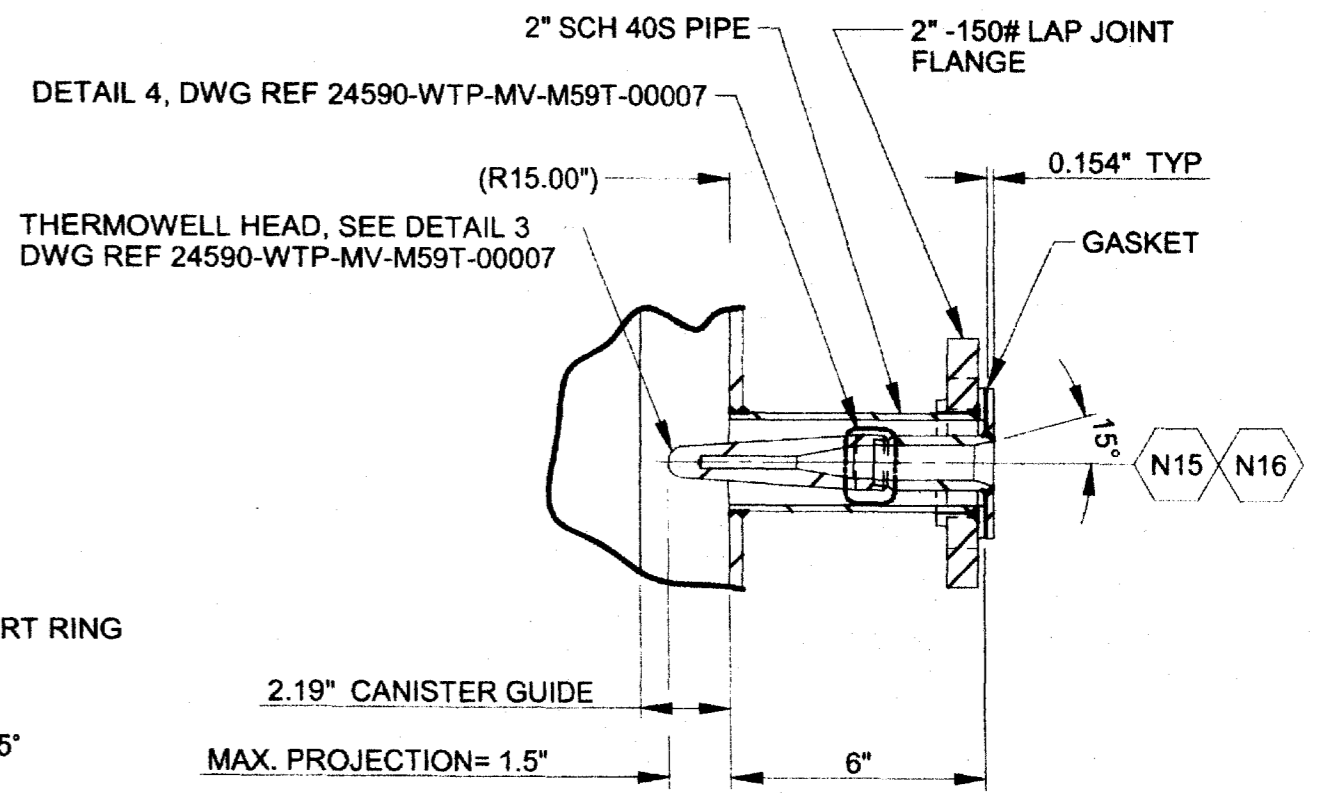


ELEVATION-CANISTER CLEARANCE
FOR TRUE ORIENTATION, SEE PLAN, SHEET 1 OF 3

1 INCORPORATED PER ORPHECOLOGY COMMENTS		DATE	BY	INITIALS
0 ISSUED FOR ADDED DETAILS, SEE NOTE 3.		DATE	BY	INITIALS
REV		DESCRIPTION	ORG	CHKD
CM		REVISION HISTORY	DATE	BY
PROJECT No: 24590		RIVER PROTECTION PROJECT		
SITE: HANFORD		WASTE TREATMENT PLANT		
AREA: 200-E		2435 STEVENS CENTER PLACE		
BUILDING No: 30		RICHLAND, WA 99354		
BY: DATE:		CONTRACT No: DE-AC27-01RV14136		
ORIGINATOR: BHARAT MAKADIA 4/23/09		EQUIPMENT ASSEMBLY		
CHECKER: M A SEED 4/23/09		CANISTER DECON VESSEL 1		
APPROVER: J L JULYK 4/24/09		HDH-VSL-00002		
REVIEWER: D BARTON 4/23/09		SHEET 3 OF 3		
CONTENT APPLICABLE TO ALARA: YES NO		SCALE: NONE		
ADR No: 24590-WTP-ADR-M-03-008 REV: 2		24590-HLW-MV-HDH-00010003		
EHS SCREENING REQUIRED: YES NO EHS INITIAL IF YES: JLC		REV 1		
SCREENING REQUIRED FOR DRAWING TYPES IDENTIFIED IN 24590-WTP-GPP-SPEC-002		COMPUTER GENERATED: MANUAL DESIGN CHANGES NOT PERMITTED		



NOZZLE	SIZE	SCHEDWALL	SERVICE/REMARKS	2" DIM	REF DWG/DET	CONN PIPE SIZE/SCHED
N01	1"	40S	SPRAY INLET	189"		2" L.J. FLANGED
N02	1"	40S	SPRAY INLET	177"		2" L.J. FLANGED
N03	2"	40S	CERUM 4" INLET	176"		2" L.J. FLANGED
N04	1/2"	40S	BALANCE	193"		1/2" L.J. FLANGED
N05	1/2"	40S	DENSITY	7"		1/2" L.J. FLANGED
N06	1/2"	40S	LEVEL	3"		1/2" L.J. FLANGED
N07	2"	40S	EFFLUENT OUTLET	12 1/2"		2" L.J. FLANGED
N08	2"	40S	EFFLUENT OUTLET	12 1/2"		2" L.J. FLANGED
N09	1/2"	40S	PLANT AIR TO SPARGE RING	2 1/3"		1/2" L.J. FLANGED
N10	1"	40S	SPARE	183"		1" BLIND L.J. FLANGED
N11	1"	40S	COOLING/HEATING WATER INLET	177"		1" L.J. FLANGED
N12	1"	40S	SPARE	183"		1" BLIND L.J. FLANGED
N13	1"	40S	COOLING/HEATING WATER OUTLET	177"		1" L.J. FLANGED
N14	3"	40S	OVERFLOW	187 1/4"		3" L.J. FLANGED
N15	2"	40S	TEMPERATURE	7"		1" L.J. FLANGED
N16	2"	40S	TEMPERATURE	7"		1" L.J. FLANGED



GENERAL NOTES:

- ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
- ALL PIPE CONNECTIONS SHALL BE TERMINATED WITH 150# LAP JOINT FLANGE CONNECTION, TIB-363 GR 2, STUB END, 304 FLANGE.
- COOLING/HEATING COILS SHALL BE 1" O.D. TUBING. BOTH COILS CONNECTED IN SERIES, SEE DETAIL 7.
- SPRAY NOZZLES SHALL BE SPRAYING SYSTEMS 1/4-HHWB-TI FULL JET CAPACITY SIZE 10.
- COIL ASSEMBLY LIFTING LUGS SHALL BE LOCATED CO-LINEAR WITH THE CENTER OF GRAVITY OF THE COIL AND LID ASSEMBLY.
- REVISED/ADDED/DELETED:
 - ADDED DETAIL 4
 - DELETED HOLD NOTES
 - DELETED HOLD #2
 - REVISED N15 AND N16 FOR 2" PIPE SIZE
 - ADDED THERMOWELL CONNECTION STANDARD DETAILS IN REF DWG
- DELETED
- ALL NOZZLE PROJECTIONS ARE 21" FROM FACE OF LAP JOINT TO CENTERLINE OF VESSEL EXCEPT N15 AND N16.
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
- NOZZLES N11 AND N13 ARE BEING MOVED TO A DIFFERENT LOCATION ON THE VESSEL. DUE TO RE-LOCATION OF NOZZLES N11 AND N13, VENDOR THEN CUT-OFF BOTH CURRENT NOZZLES N11 AND N13. VENDOR THEN SHALL PATCH-UP BOTH HOLES CREATED BY RE-LOCATION IN ACCORDANCE WITH ASME SECTION VIII DIVISION 1.
- THIS DRAWING IN PART SUPERSEDES 24590-HLW-MV-HDH-00006 REV 2, 24590-HLW-MV-HDH-00007 REV 1, 24590-HLW-MV-HDH-00008 REV 1 & 24590-HLW-MV-HDH-00009 REV 1 AND INCLUDES INFORMATION FROM THE FOLLOWING CHANGE DOCUMENTS:
24590-HLW-MV-HDH-00003
24590-HLW-MV-HDH-00004
24590-HLW-MV-HDH-00005
24590-WTP-M6N-M80T-00003

DWG NO	REV	TITLE
24590-HLW-MV-HDH-00011001	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 1 OF 3
24590-HLW-MV-HDH-00011002	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 2 OF 3
24590-HLW-MV-HDH-00011003	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 3 OF 3

PLEASE NOTE THAT SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSETS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

DWG NO	REV	TITLE
24590-HLW-MV-HDH-00001	1	P & ID - HLW CANISTER DECONTAMINATION HANDLING SYSTEM
24590-HLW-MV-HDH-00006	1	MECHANICAL DATA SHEET
24590-WTP-M6N-M80T-00001	1	PRESSURE VESSEL TOLERANCES STANDARD DETAILS
24590-WTP-M6N-M80T-00007	1	THERMOWELL CONNECTION STANDARD DETAILS
24590-WTP-M6N-M80T-00008	1	VESSEL NAME PLATE STANDARD DETAILS

ISSUED BY	PROJECT NO.	DATE
RPP-WTP-PDC	24590	4/23/09
CHECKER	SITE	DATE
M A SEED	HANFORD	4/23/09
APPROVER	AREA	DATE
J L JULYK	200-E	4/24/09
REVIEWER	BUILDING NO.	DATE
D BARTON	30	4/23/09

CONTENT APPLICABLE TO ALARA?	YES	NO
ADR NO. 24590-WTP-ADR-M03-008	YES	NO
SCALE	DATE	REV
NONE	4/23/09	2

ISSUED BY	PROJECT NO.	DATE
RPP-WTP-PDC	24590	4/23/09
CHECKER	SITE	DATE
M A SEED	HANFORD	4/23/09
APPROVER	AREA	DATE
J L JULYK	200-E	4/24/09
REVIEWER	BUILDING NO.	DATE
D BARTON	30	4/23/09

ISSUED BY	PROJECT NO.	DATE
RPP-WTP-PDC	24590	4/23/09
CHECKER	SITE	DATE
M A SEED	HANFORD	4/23/09
APPROVER	AREA	DATE
J L JULYK	200-E	4/24/09
REVIEWER	BUILDING NO.	DATE
D BARTON	30	4/23/09

ISSUED BY	PROJECT NO.	DATE
RPP-WTP-PDC	24590	4/23/09
CHECKER	SITE	DATE
M A SEED	HANFORD	4/23/09
APPROVER	AREA	DATE
J L JULYK	200-E	4/24/09
REVIEWER	BUILDING NO.	DATE
D BARTON	30	4/23/09

ISSUED BY	PROJECT NO.	DATE
RPP-WTP-PDC	24590	4/23/09
CHECKER	SITE	DATE
M A SEED	HANFORD	4/23/09
APPROVER	AREA	DATE
J L JULYK	200-E	4/24/09
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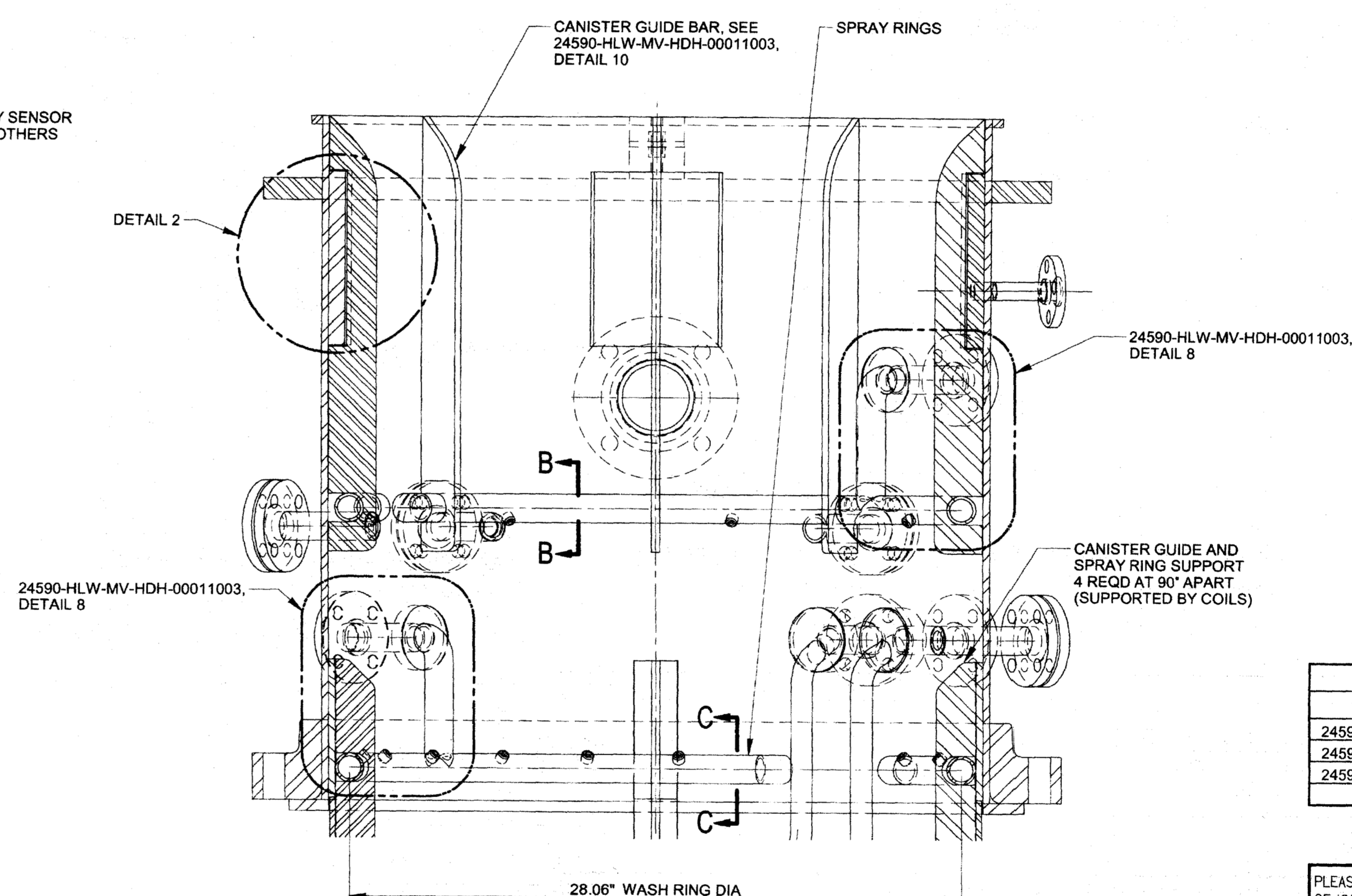
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CHECKER	SITE	DATE
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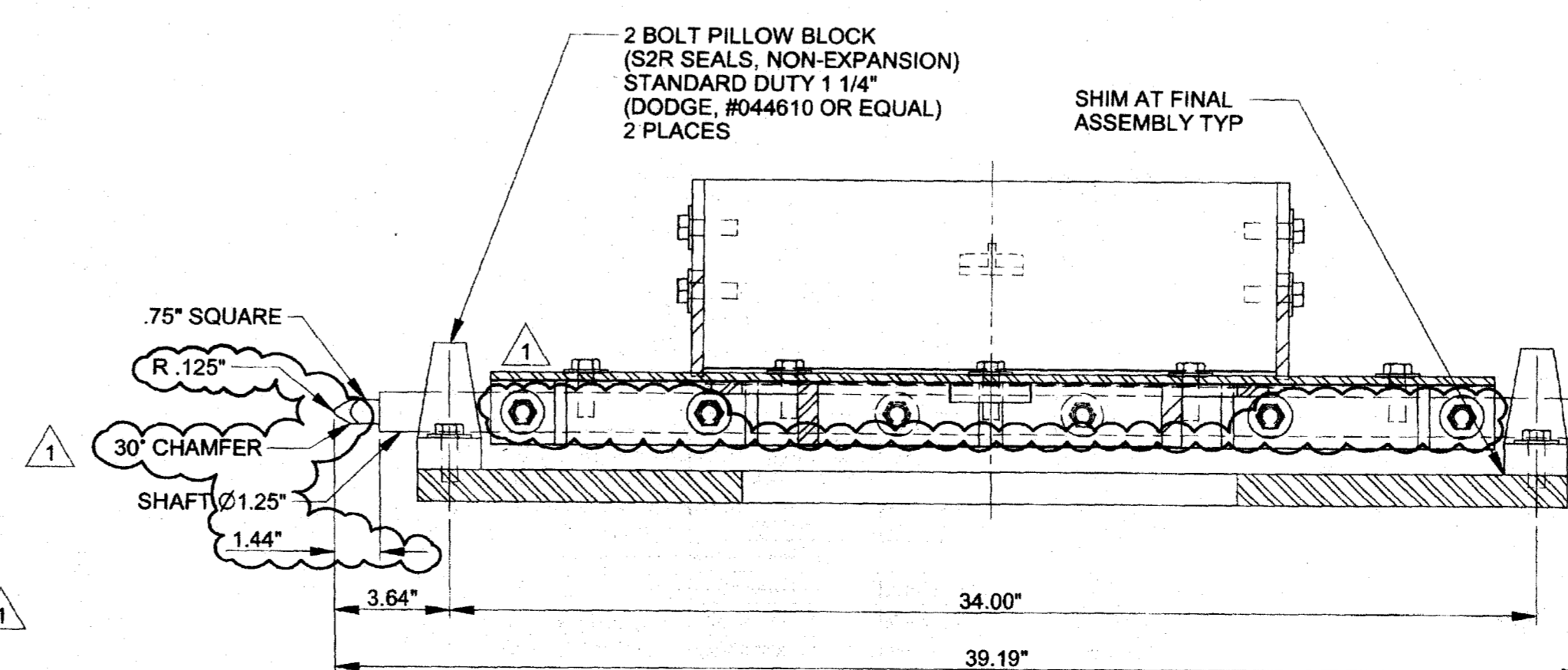
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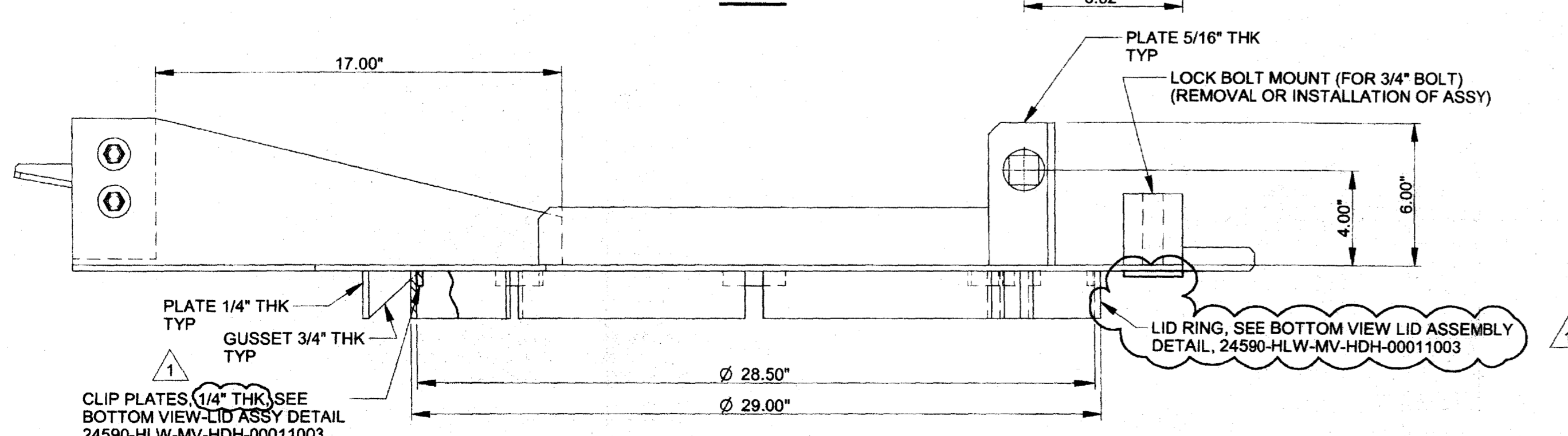
1. FOR GENERAL NOTES SEE SHEET 1
2. CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
3. 24590-HLW-MV-HDH-00011002 REV 0 SUPERSEDES 24590-HLW-MV-HDH-00006 REV 2, 24590-HLW-MV-HDH-00007 REV 1, 24590-HLW-MV-HDH-P0006 REV 1 & 24590-HLW-MV-HDH-P0007 REV 1.

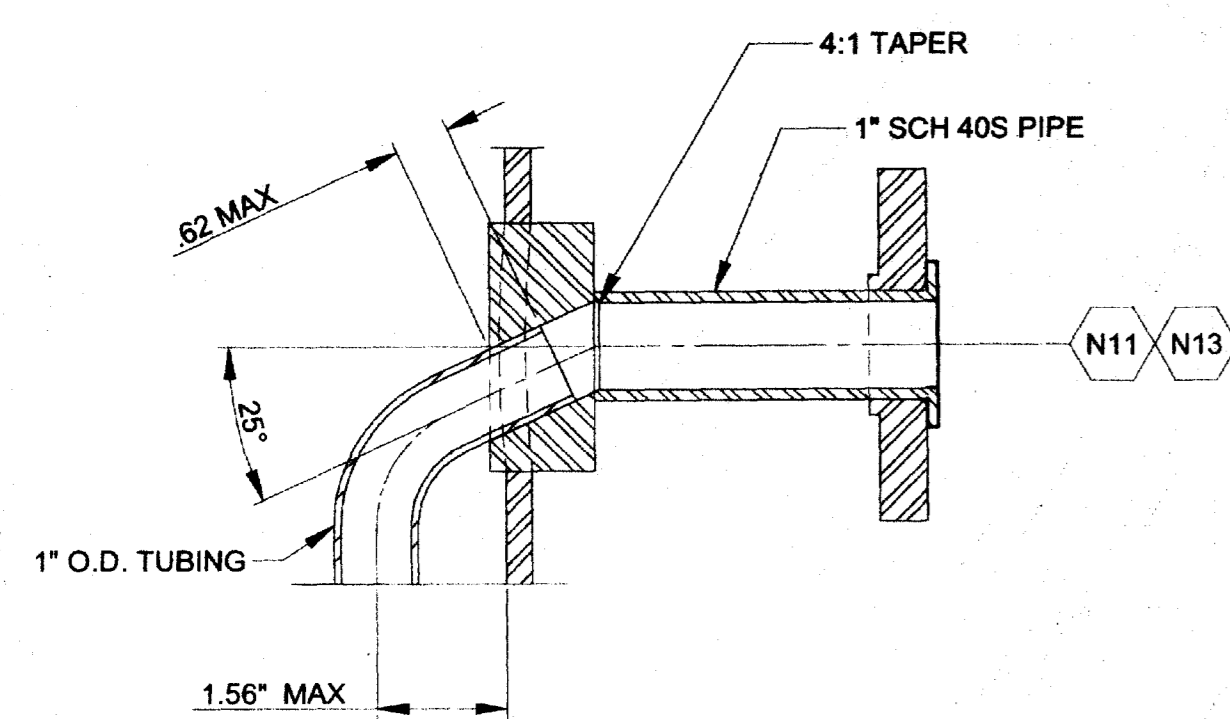
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24580-HLW-MV-HDH-00011002	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 2 OF
24580-HLW-MV-HDH-00011003	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 3 OF

PLEASE NOTE THAT SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (AEA), ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSERTS, THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL, NUCLEAR, AND BYPRODUCT MATERIALS AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

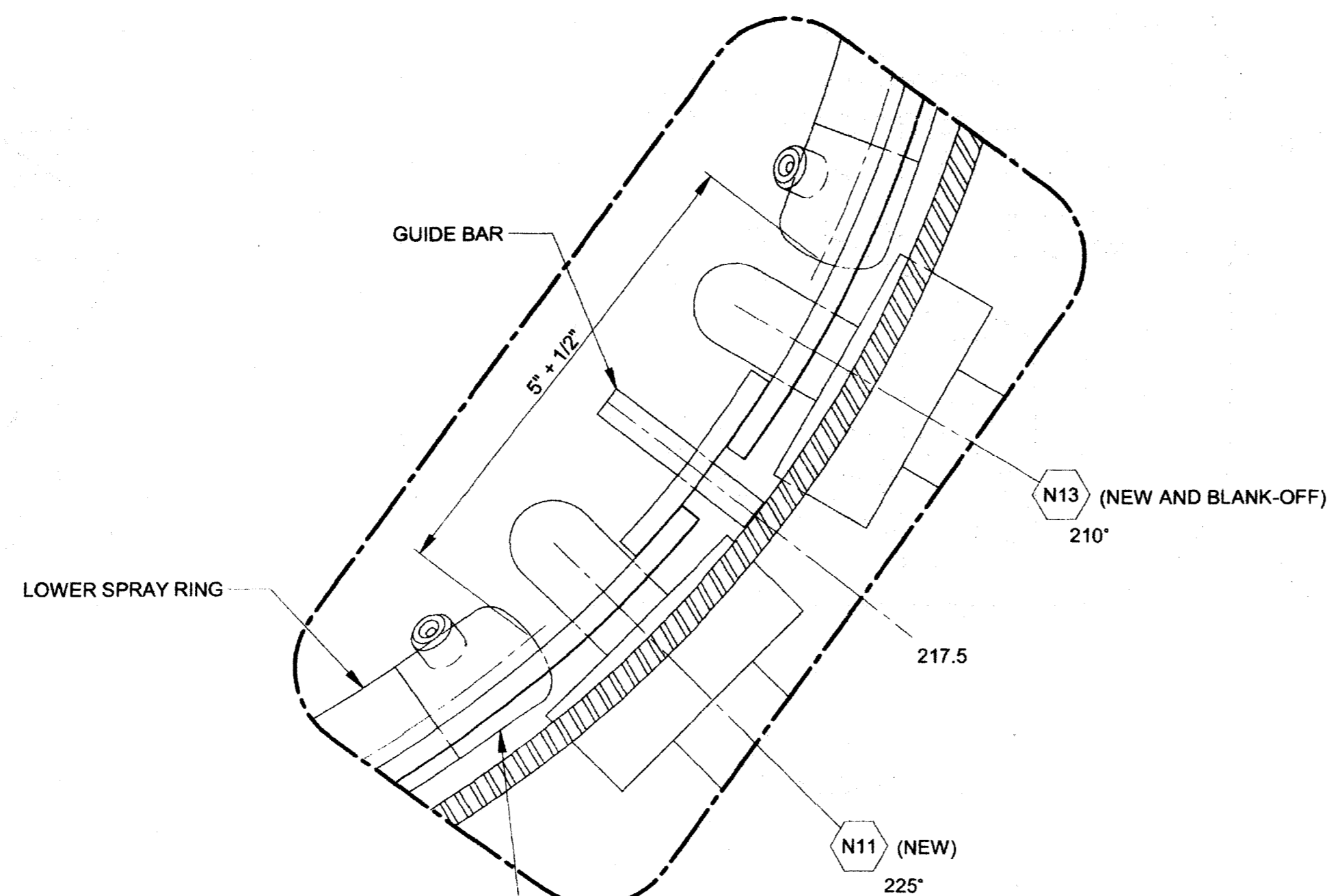


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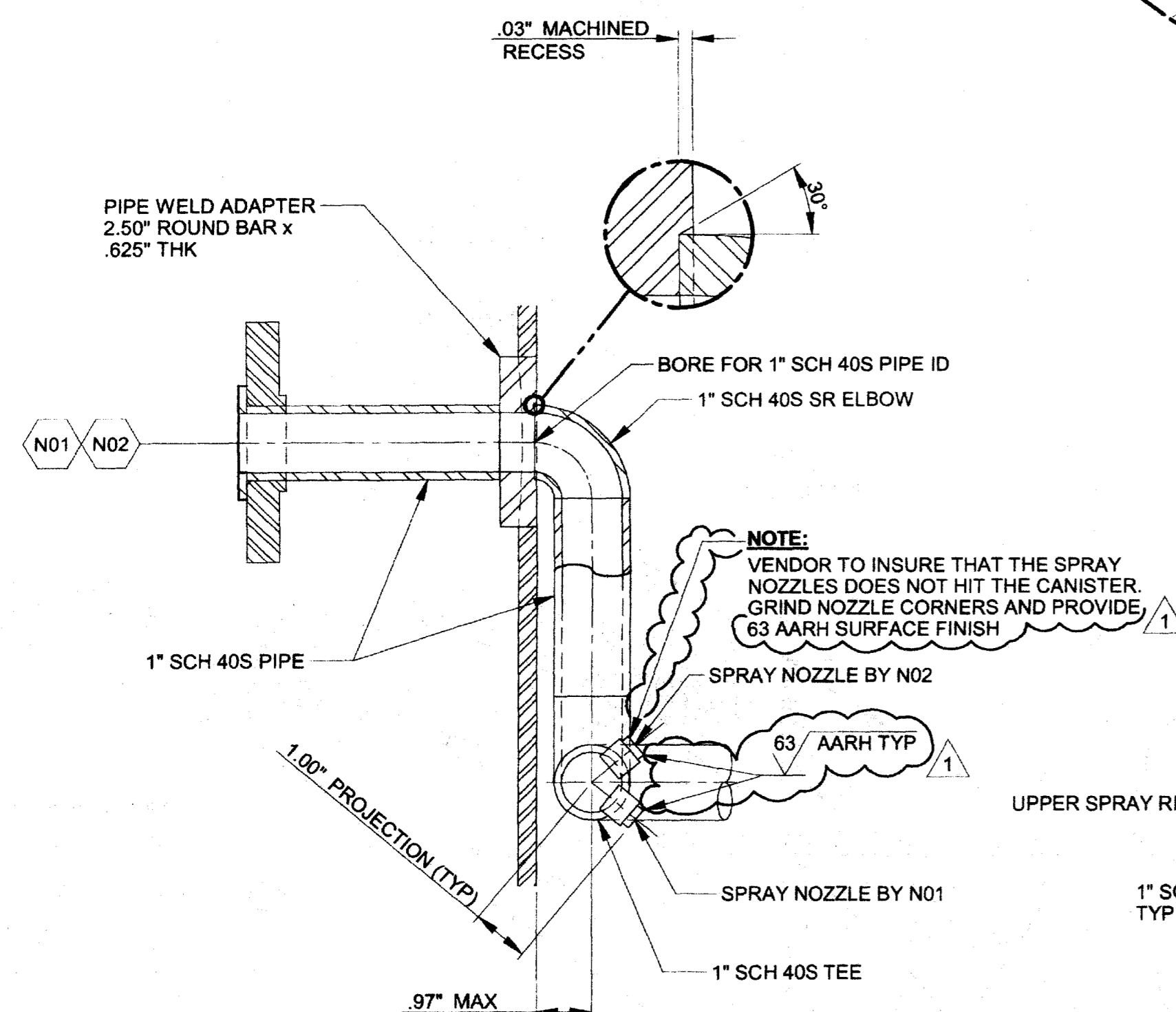
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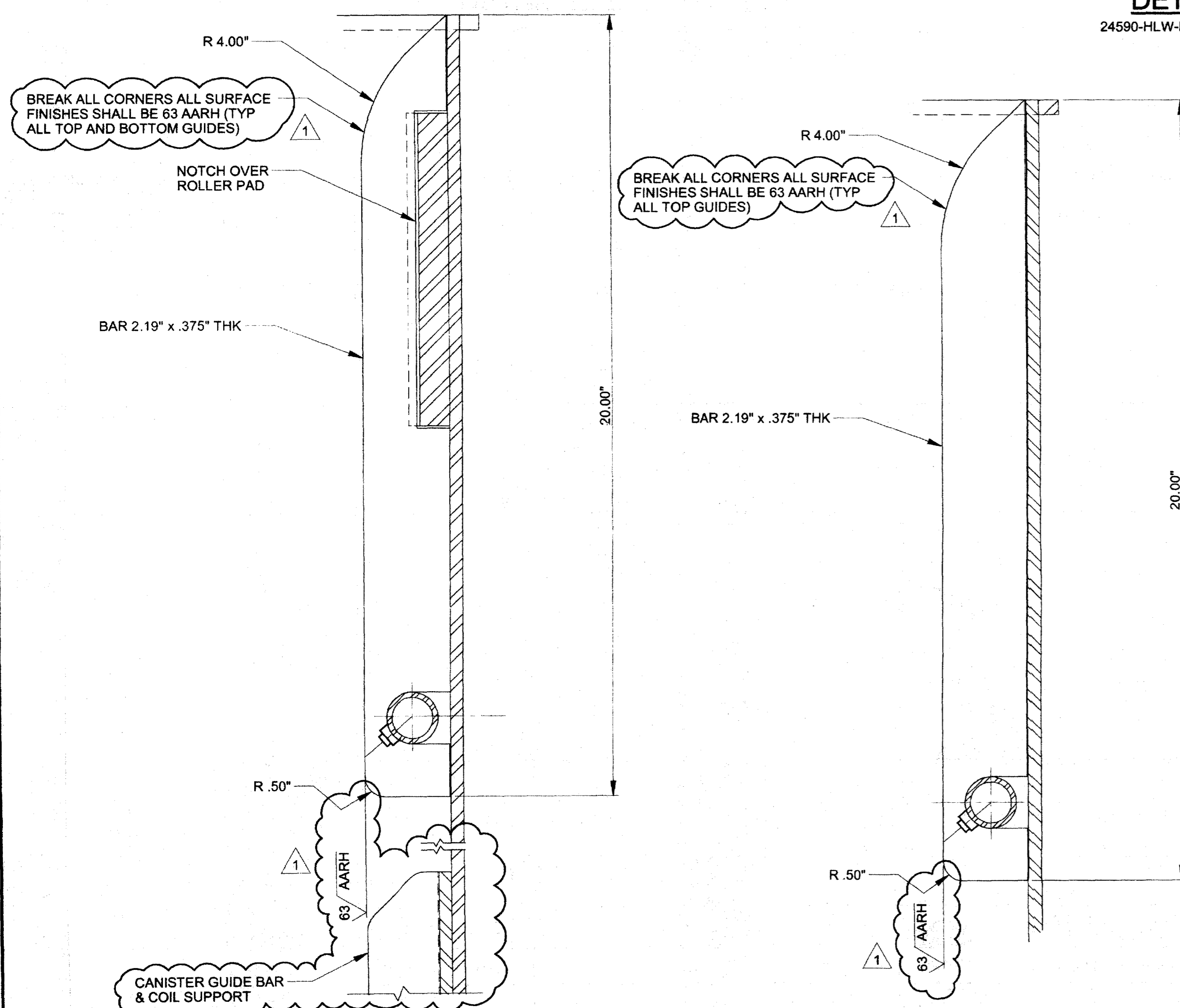
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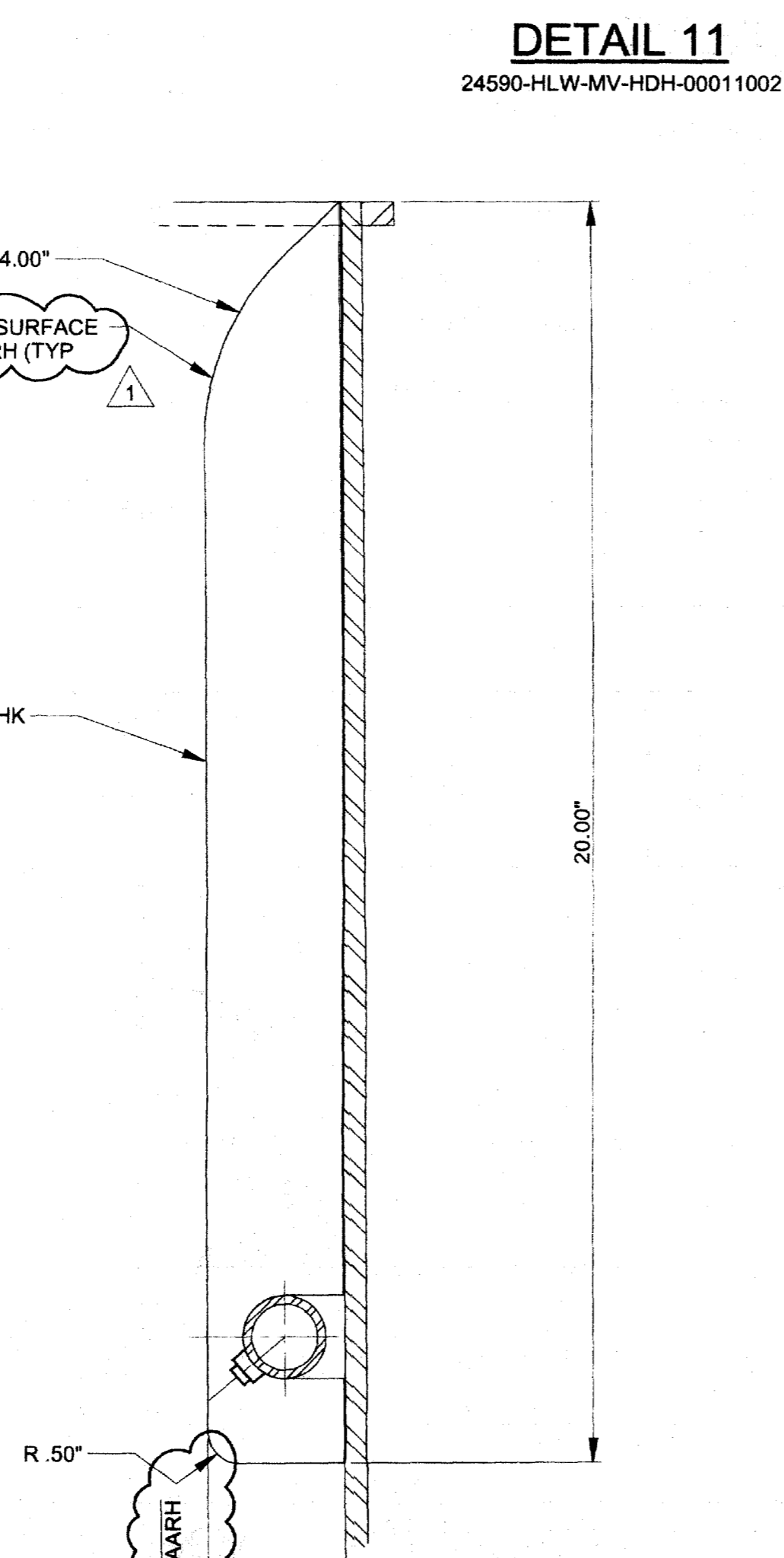
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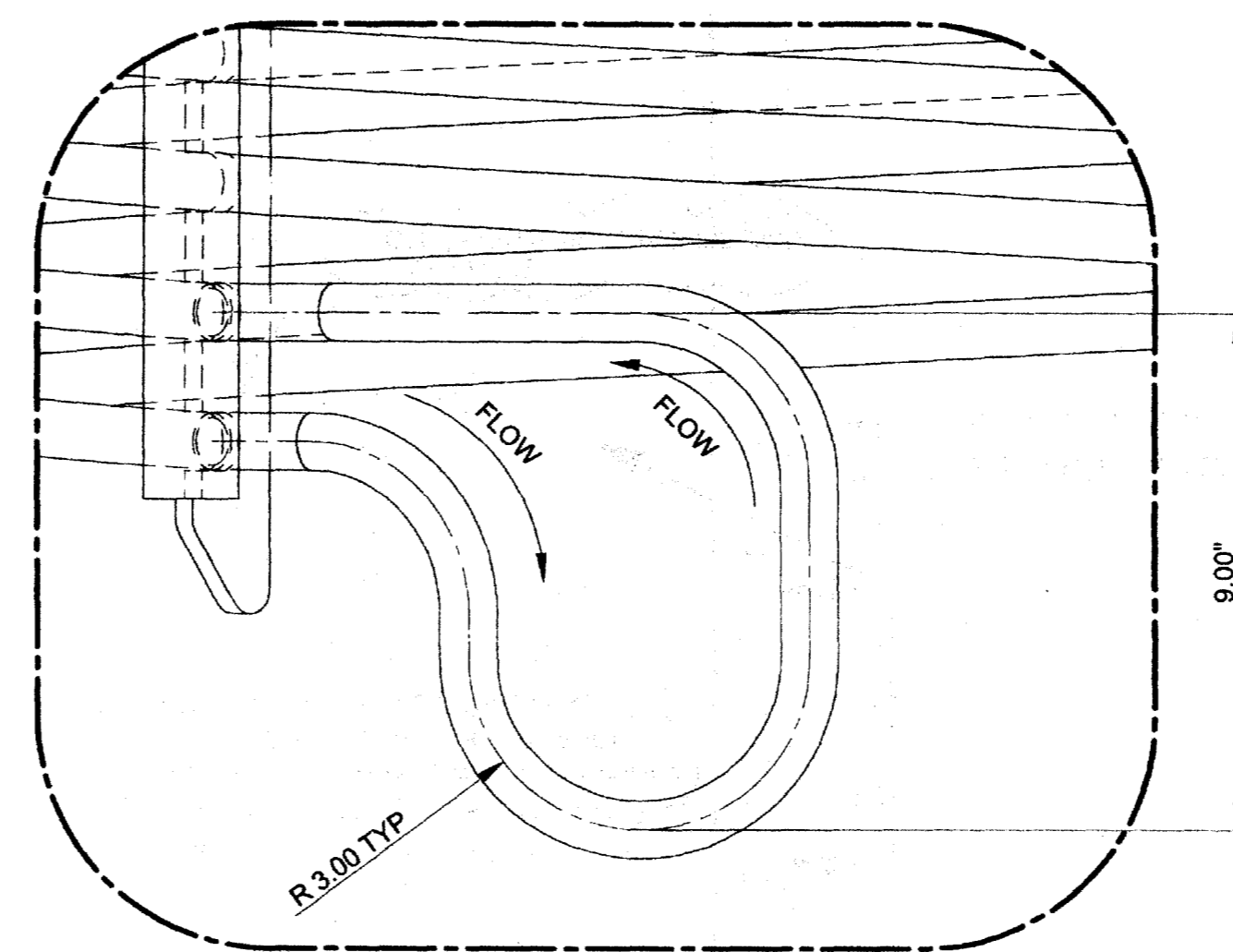
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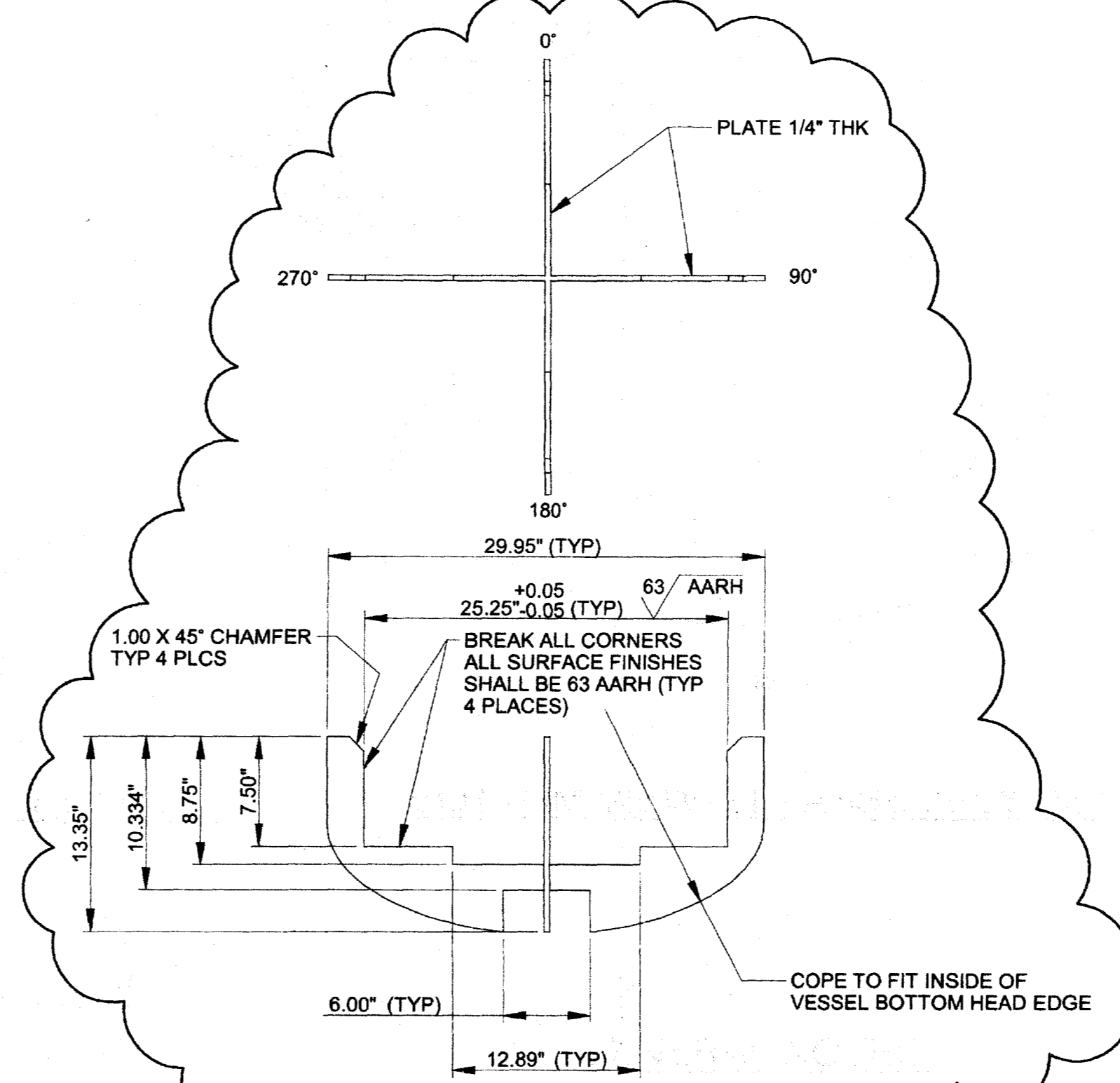
DETAIL 9
LOCATED ON 0°, 90°, 180° AND 270°
24590-HLW-MV-HDH-00011002



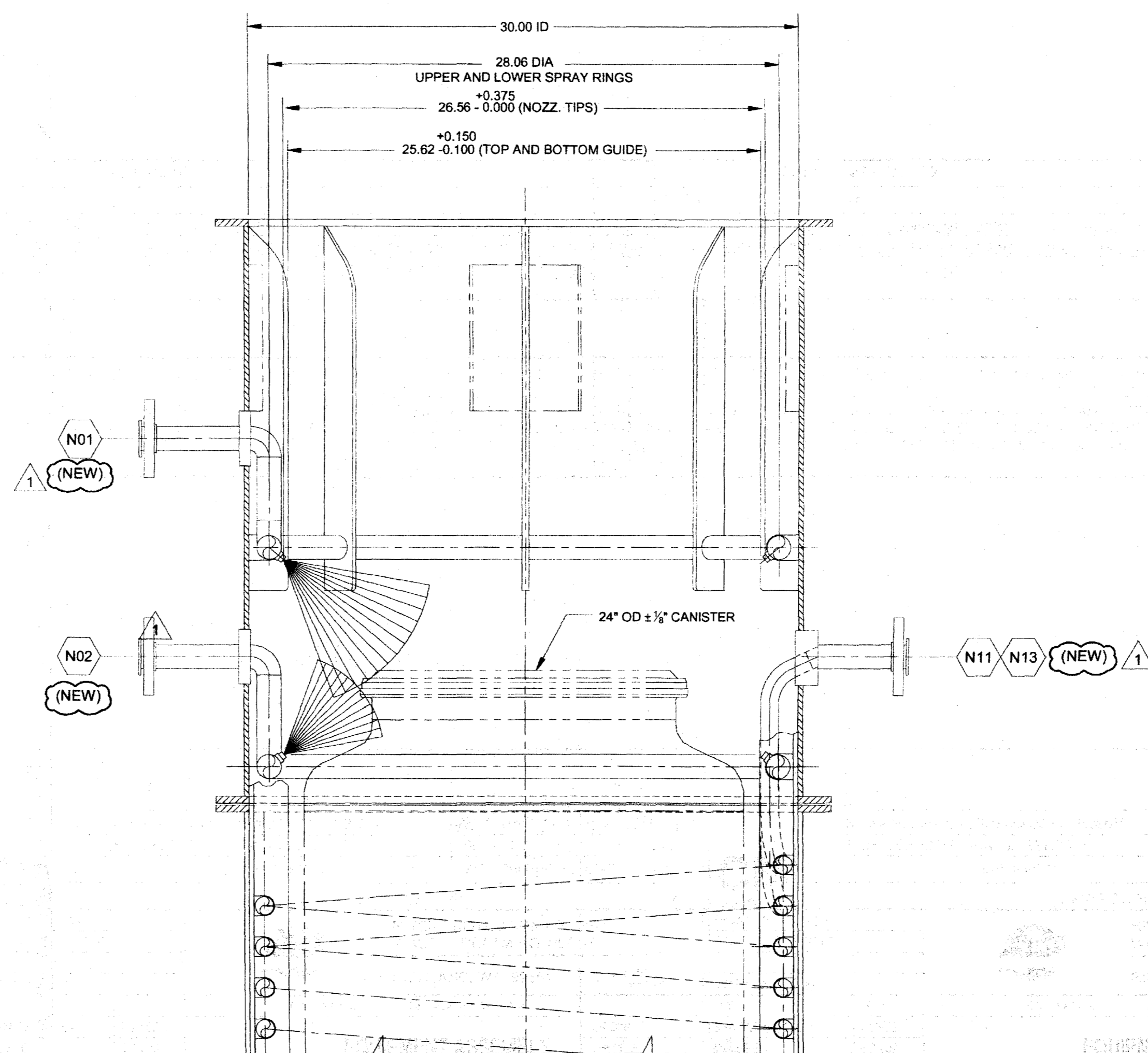
DETAIL 10
LOCATED ON 45°, 135°, 217.5° AND 315°
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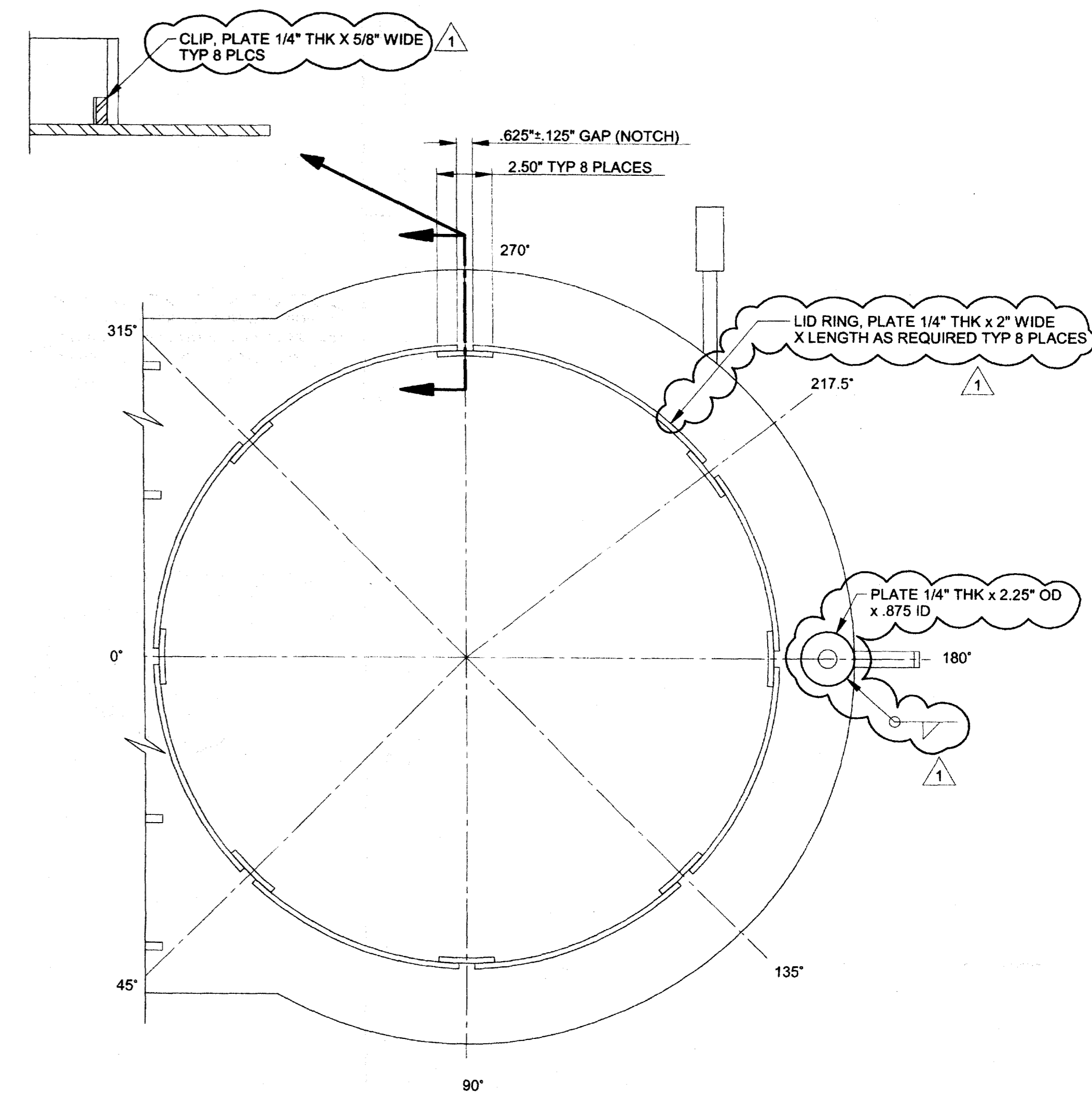
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24590-HLW-MV-HDH-00011001



DETAIL 12
24590-HLW-MV-HDH-00011001



ELEVATION-CANISTER CLEARANCE
FOR TRUE ORIENTATION, SEE PLAN, SHEET 1 OF 3



BOTTOM VIEW-LID ASSEMBLY DETAIL

GENERAL NOTES:

- FOR GENERAL NOTES SEE SHEET 1
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
- 24590-HLW-MV-HDH-00011003 REV 0 SUPERSEDES 24590-HLW-MV-HDH-00006 REV 2, 24590-HLW-MV-HDH-00007 REV 1, 24590-HLW-MV-HDH-P0006 REV 1 & 24590-HLW-MV-HDH-P0007 REV 1.

DRAWINGS INDEX

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24590-HLW-MV-HDH-00011002	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 2 OF 3
24590-HLW-MV-HDH-00011003	1	EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 3 OF 3

PLEASE NOTE THAT SOURCE, SPECIAL, NUCLEAR AND BYPRODUCT MATERIALS, AS DEFINED IN THE ATOMIC ENERGY ACT OF 1954 (42 USC 2011) ARE REGULATED AT THE U.S. DEPARTMENT OF ENERGY (DOE) FACILITIES EXCLUSIVELY BY DOE ACTING PURSUANT TO ITS AEA AUTHORITY. DOE ASSESSMENTS THAT PURSUANT TO THE AEA, IT HAS SOLE AND EXCLUSIVE RESPONSIBILITY AND AUTHORITY TO REGULATE SOURCE, SPECIAL, NUCLEAR, AND BYPRODUCT MATERIALS AT DOE-OWNED NUCLEAR FACILITIES. INFORMATION CONTAINED HEREIN ON RADIONUCLIDES IS PROVIDED FOR PROCESS DESCRIPTION PURPOSES ONLY.

CM
QUALITY LEVEL

ISSUED BY RPP-WTP PDC REVISE STAMP	PROJECT No: 24590 SITE: HANFORD AREA: 200-E BUILDING No: 30 BY: BHARAT MAKADIA CHECKER: M A SEED APPROVER: J L JULYK REVIEWER: D BARTON	DATE: 4/23/09 4/23/09 4/24/09 4/23/09
CONTENT APPLICABLE TO ALARA? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ADR No: 24590-WTP-ADR-M-03-008 EHS SCREENING REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EHS INITIAL IF YES: JZL	REV: 2	SCALE: NONE

REVISION HISTORY	CONTRACT No: DE-AC27-01RV14136
RIVER PROTECTION PROJECT WASTE TREATMENT PLANT 2435 STEVENS CENTER PLACE RICHLAND, WA 99354	
EQUIPMENT ASSEMBLY CANISTER DECON VESSEL 2 HDH-VSL-00004 SHEET 3 OF 3	
24590-HLW-MV-HDH-00011003	REV 1

Quarter Ending June 30, 2010

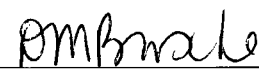
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Hanford Facility RCRA Permit Modification Notification Form
Part III, Operating Unit 10
Waste Treatment and Immobilization Plant

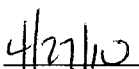
Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
 Replace LAW Facility Material Selection Data Sheets With Updated Corrosion Evaluations in Appendix 9.9 of
 the Dangerous Waste Permit (DWP).

Submitted by Co-Operator:

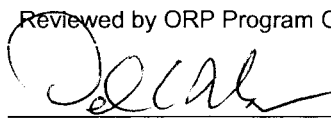


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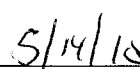


Date

Reviewed by ORP Program Office:



G. A. Girard



Date

Quarter Ending June 30, 2010

24590-LAW-PCN-ENV-09-005

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Waste Treatment and Immobilization Plant

Permit Part:

Part III, Operating Unit 10Description of Modification:

The purpose of this Class 1 prime modification is to replace Material Selection Data Sheets with updated Corrosion Evaluations for the following LAW Facility systems in Appendix 9.9 of the DWP.

- LFP - LAW Melter Feed Process System
- LOP - LAW Primary Offgas Process System
- LVP - LAW Secondary Offgas/Vessel Vent Process System
- RLD - Radioactive Liquid Waste Disposal System

Appendix 9.9

Replace:	With:
24590-LAW-N1D-LFP-P0004, Rev. 0	24590-LAW-N1D-LFP-00004, Rev. 2
See discussion below	24590-LAW-N1D-LFP-00006, Rev. 0
24590-LAW-N1D-LOP-P0003, Rev. 0	24590-LAW-N1D-LOP-00003, Rev. 3
24590-LAW-N1D-LVP-P0002, Rev. 0	24590-LAW-N1D-LVP-00002, Rev. 2
24590-LAW-N1D-RLD-P0001, Rev. 1	24590-LAW-N1D-RLD-00001, Rev. 5
24590-LAW-N1D-RLD-P0002, Rev. 0	24590-LAW-N1D-RLD-00002, Rev. 3
24590-LAW-N1D-RLD-P0005, Rev. 0	24590-LAW-N1D-RLD-00005, Rev. 4

This modification requests Ecology approval and incorporation into the permit the specific changes that are identified by revision bars that have been issued since the last revision of the permitted version. Revisions are the result of ongoing design review. The following identifies the changes:

24590-LAW-N1D-LFP-00004 (LFP-VSL-00001/-00003, Melter 1 & 2 Feed Preparation Vessels)

- Removed LFP-VSL-00002/-00004 from MSDS and added to Corrosion Evaluation 24590-LAW-N1D-LFP-00006, Rev.0
- Incorporated new Process Corrosion Data Sheet
- Updated Section j -- Erosion
- Added Section p -- Inadvertent Addition of Nitric Acid
- Revised agitator materials recommendation
- Updated References and Bibliography

24590-LAW-N1D-LFP-00006 (LFP-VSL-00002/-00004, Melter 1 & 2 Feed Vessels)

- A Material Selection Data Sheet was not prepared since the Melter 1 & 2 Feed Vessels LFP-VSL-00002/-00004 were previously incorporated into the DWP under 24590-LAW-N1D-LFP-P0004
- Vessels were subsequently removed from 24590-LAW-N1D-LFP-P0004 and placed under Corrosion Evaluation 24590-LAW-N1D-LFP-00006

24590-LAW-N1D-LOP-00003 (LOP-WESP-00001 & LOP-WESP-00002, Melter 1 and 2 WESP)

- Updated wear allowance based on *Evaluation of Stainless Steel Wear Rates in WTP Waste Streams at Low Velocities*, 24590-WTP-RPT-M-04-0008
- Updated References and Bibliography

Quarter Ending June 30, 2010

24590-LAW-PCN-ENV-09-005

24590-LAW-N1D-LVP-00002 (LVP-TK-00001, Caustic Collection Tank)

- Updated wear allowance based on *Evaluation of Stainless Steel Wear Rates in WTP Waste Streams at Low Velocities*, 24590-WTP-RPT-M-04-0008
- Updated Section g -- Microbiologically Induced Corrosion (MIC)
- Updated References and Bibliography

24590-LAW-N1D-RLD-00001 (RLD-VSL-00004, C3/C5 Drains/Sump Collection Vessel)

- Updated wear allowance based on *Evaluation of Stainless Steel Wear Rates in WTP Waste Streams at Low Velocities*, 24590-WTP-RPT-M-04-0008
- Incorporated new Process Corrosion Data Sheet (PCDS)
- PCDS includes data for "Leach" and "No Leach." "Leach" refers to the process of adding caustic to HLW feed to dissolve aluminum
- Added Section p -- Inadvertent Addition of Nitric Acid
- Updated References and Bibliography

24590-LAW-N1D-RLD-00002 (RLD-VSL-00005, SBS Condensate Collection Vessel)

- Updated wear allowance based on *Evaluation of Stainless Steel Wear Rates in WTP Waste Streams at Low Velocities*, 24590-WTP-RPT-M-04-0008
- Incorporated new Process Corrosion Data Sheet
- PCDS includes data for "Leach" and "No Leach." "Leach" refers to the process of adding caustic to HLW feed to dissolve aluminum
- Added Section p -- Inadvertent Addition of Nitric Acid
- Updated References and Bibliography


24590-LAW-N1D-RLD-00005 (RLD-VSL-00003, Plant Wash Vessel)

- Modified Operating Description
- Updated wear allowance based on *Evaluation of Stainless Steel Wear Rates in WTP Waste Streams at Low Velocities*, 24590-WTP-RPT-M-04-0008
- Incorporated new Process Corrosion Data Sheet
- PCDS includes data for "Leach" and "No Leach." "Leach" refers to the process of adding caustic to HLW feed to dissolve aluminum
- Added Section p -- Inadvertent Addition of Nitric Acid
- Updated References and Bibliography

There are no outstanding change documents associated with this modification.

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number:
Enter wording of WAC 173-303-830, Appendix I Modification citation:
In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved/Concur: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial:	Reviewed by Ecology:  Kelly Elsethagen Date: 7-30-10
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CORROSION EVALUATION

LFP-VSL-00001 & LFP-VSL-00003 (LAW)

Melter 1 & 2 Feed Preparation Vessels

- Design Temperature (°F) (max/min): 150/40
- Design Pressure (psig) (max/min): 15/FV
- Location: process cell

ISSUED BY
RPP-WTP PDC

Offspring items

LFP-AGT-00001, LFP-AGT-00003

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

Operating Modes Considered:

- The vessel is filled with waste at up to 150°F.
- The vessel will be washed with demineralized water.

Assumptions:

- No steam ejector
- There will be no acid used in LAW systems (based on information from T Anderson)

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: Vessels: 316 (max 0.030%C; dual certified)

Agitator: Stellite 712, or equivalent

Recommended Corrosion Allowance: 0.04 inch (includes 0.00 inch erosion allowance)

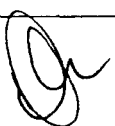


0.125 inch required on bottom head and shell
(includes erosion and corrosion)

Process & Operations Limitations:

- Develop rinsing/flushing procedure.
- Do not allow untreated process water to remain stagnant in the vessel without approval by Materials Specialist.

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA) are regulated at the U. S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

Concurrence TD
Operations

2	10/14/04	Remove LFP-VSL-00002/4 to another CE Incorporate new PCDS Update Section j -- Erosion Add Section p -- Inadvertent Addition of Nitric Acid Revise agitator materials recommendation			NA	
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

REVISION HISTORY

1	7/23/03	Update design temp/pressure/assoc. items Update vessel number and descriptions Eliminate Stellite overlay recommendation Revise CA recommendation Remove reference to open issues Re-format references Append updated MSDS Add DWP note	DLAdler	HMKrafft	NA	APRangus
0	7/8/02	Initial Issue	DLAdler	JRDivine	SS	SMKirk
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

LAW concentrate will be mixed with glass formers and sucrose in these vessels. Mechanical agitators are present in vessel for blending. Agitators are maintainable and replaceable.

a General Corrosion

Hamner (1981) lists a corrosion rate for 304 (and 304L) in NaOH of less than 20 mpy (500 $\mu\text{m/y}$) at 77°F and over 20 mpy at 122°F. He also states 316 (and 316L) has a rate of less than 2 mpy in 50% NaOH at temperatures up to 122°F. Dillon (2000) and Sedriks (1996) both state that the 300 series alloys are acceptable in up to 50% NaOH at temperatures up to about 122°F or slightly above. Similar results were observed by Edgemon et al (1995) for the 242-A Evaporator at Hanford.

In this system, the normal pH, nitrate concentrations and temperatures are such that 304L and 316L stainless steels will be acceptable.

Conclusion:

304L or 316L is expected to be sufficiently resistant to the waste solution with a probable general corrosion rate of less than 1 mpy.

b Pitting Corrosion

Chloride is known to cause pitting of stainless steels and related alloys in acid and neutral solutions. Dillon (2000) is of the opinion that in alkaline solutions, pH>12, chlorides are likely to promote pitting only in tight crevices such as might form after partial removal of deposits during multiple rinse cycles. Dillon and Koch (1995) are both of the opinion that fluoride will have little effect in an alkaline media. Edgemon et al (1995) did not observe pitting in the 242-A Evaporator but the chloride concentrations were only about 0.2% of those in this system.

Nominal operating temperature is 122°F with a range of 77 to 150°F. At these temperatures, 304L or 316L stainless steels would be acceptable in the proposed alkaline-nitrate waste in the absence of concentrating effects.

If the vessel were filled with process water and left stagnant, there would be a tendency to pit. The time to initiate would depend on the source of the water, being shorter for filtered river water and longer for DIW. Pitting has been observed in both cases, and is likely because residual chlorides are likely to remain.

Conclusion:

Localized corrosion, such as chloride induced pitting, is common but can be mitigated using alloys with higher nickel and molybdenum contents. Based on the expected operating conditions, 316L is expected to be satisfactory.

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

Not applicable to this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, the environment and also because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), chloride stress corrosion cracking does not usually occur below about 140°F. With the proposed temperatures, either 304L or 316L is acceptable. No cracking has been observed in similar waste (Zapp, 1998) at temperatures to about 266°F.

Conclusion:

At the normal operating conditions 304L and 316L stainless are both acceptable, although 316L is recommended.

e Crevice Corrosion

At the proposed operating conditions, 316L is the minimum recommended. See Pitting.

Conclusion:

See Pitting.

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system under the stated operating conditions.

g Microbiologically Induced Corrosion (MIC)

The normal operating conditions are not conducive to microbial growth.

Conclusion:

MIC is not considered a problem.

CORROSION EVALUATION

h Fatigue/Corrosion Fatigue

Corrosion fatigue does not appear to be a concern

Conclusions

Not expected to be a concern.

i Vapor Phase Corrosion

Vapor phase corrosion will be a function of the degree of agitation, solution chemistry, and temperature. Under the stated, conditions, and assuming agitation, 316L will be required.

Conclusion:

Not expected to be a concern.

j Erosion

Velocities at the walls and bottom of the vessels are expected to be below 10 f/s. The wear of the vessel bottom and wall due to both erosion and corrosion is expected to be below 0.125 inch of 316L stainless steel based on 24590-WTP-M0E-50-00002.

Conclusion:

A minimum corrosion allowance on the bottom head and shell of 0.125 inch is recommended. Agitator blades should be Stellite 712. Ultimet is acceptable if the agitator design takes into consideration Ultimet's higher wear rate.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No significantly dissimilar metals are present.

Conclusion:

Not expected to be a concern.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, the design does not provide for the presence of nitric acid reagent in this system.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-M0E-50-00002, *Increases the Wear Rate of Vessels Containing Glass Formers to Account for the Increased Velocities Along the Bottom Head Wall and to Account for Perpendicular Flow Against the Bottom Head and Wall*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
4. Dillon, CP (Nickel Development Institute), Personal Communication to J R Divine (ChemMet, Ltd., PC), 3 Feb 2000.
5. Edgemon, GL and RP Anantatmula, 1995, *Hanford Waste Tank Degradation Mechanisms*, WHC-SD-WM-ER-414, Rev 0a, Lockheed Martin Hanford corporation, Richland, WA 99352
6. Hammer, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
7. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
8. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158
9. Zapp, PE, 1998, *Preliminary assessment of Evaporator Materials of Construction*, BNF-003-98-0029, Rev 0, Westinghouse Savannah River Co., Inc for BNFL Inc

Bibliography:

1. Agarwal, DC, *Nickel and Nickel alloys*, In: Revie, WW, 2000. *Uhlig's Corrosion Handbook*, 2nd Edition, Wiley-Interscience, New York, NY 10158
2. Anderson, TD, 21 December 2000, to JR Divine: No provision for adding nitric or other acid.
3. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
4. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
5. Miles RE, 2001, Telecon to JR Divine, *LAW and HLW Gamma Radiation Exposures Estimates*, RPP-WTP, Richland, WA 99352
6. Ohl, PC to PG Johnson, Internal Memo, Westinghouse Hanford Co, *Technical Bases for Cl- and pH Limits for Liquid Waste Tank Cars*, MA: PCO:90/01, January 16, 1990.
7. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
8. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) Melter 1 & 2 feed prep vessel (LFP-VSL-00001, LFP-VSL-00003)Facility LAWIn Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	4.10E+01	3.84E+01			
Chloride	g/l	1.84E+01	2.00E+01			
Fluoride	g/l	1.84E+01	2.01E+01			
Iron	g/l	2.84E+00	2.90E+00			
Nitrate	g/l	2.73E+02	2.89E+02			
Nitrite	g/l	8.22E+01	8.93E+01			
Phosphate	g/l	5.93E+01	6.30E+01			
Sulfate	g/l	3.18E+01	3.43E+01			
Mercury	g/l	9.46E-02	3.18E-02			
Carbonate	g/l	1.29E+02	1.11E+02			
Undissolved solids	wt%	43.9%	43.3%			
Other (Pb)	g/l	6.88E-01	2.84E-02			
Other	g/l					
pH	N/A					Note 2
Temperature	°F					Note 3, Note 4
List of Organic Species:						
References						
System Description: 24590-LAW-3YD-LFP-00001, Rev 0						
Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A						
Normal Input Stream #: TCP03/LCP01, LFP05						
Off Normal Input Stream # (e.g., overflow from other vessels): N/A						
P&ID: 24590-LAW-M6-LFP-00001, 24590-LAW-M6-LFP-00003, Rev 1						
PFD: 24590-LAW-M5-V11T-00001, -00002, Rev 4						
Technical Reports: N/A						
Notes:						
1. Concentrations less than 1x 10 ⁻⁴ g/l do not need to be reported; list values to two significant digits max.						
2. pH 13.9 to 14.7 (24590-WTP-M4C-V11T-00005, Rev A)						
3. T operation: 77 °F to 150 °F, T nominal 122 °F (24590-LAW-MVC-LFP-00001, Rev C)						
4. The 150 °F is maximum temperature from pretreatment and no additional design margin is required.						
Assumptions:						

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data**6.2.1 Melter 1 and Melter 2 Feed Preparation Vessels (LFP-VSL-00001 and LFP-VSL-00003)****Routine Operations**

The melter feed preparation vessels (MFPVs) (LFP-VSL-00001 and LFP-VSL-00003) are designed for mixing LAW concentrate with glass formers and sucrose. The MFPVs are sized to make up melter feed batches that will feed the melter for a minimum of 16 hours when the melters are operating at a glass production rate of 15 t/day/melter. Supporting equipment includes:

- One mechanical agitator
- Vertical pumps
- Pressure indicator
- Density indicator
- Liquid level indicators
- Temperature indicator
- Rotary cleaning jets for periodic wash-down
- Overflow line to C3/C5 drains/sump collection vessel (RLD-VSL-00004)

The agitators will blend the glass formers and concentrate to a homogeneity criteria that ensures the final product will meet qualification requirements.

The agitators and pumps are expected to require maintenance and/or replacement during the life of the plant. The wet process cell is designed to allow for replacement of the vessels (not expected), agitators, and pumps.

Each MFPV interfaces with autosampling system. Before a sample is taken, the concentrate or melter feed will be pumped through a sample circulation loop. The sampler will pull a portion of the process stream after a specified duration of circulating the fluids.

Non-Routine Operations that Could Affect Corrosion/Erosion

- Overflows to RLD-VSL-00004
- Washing required on failure of agitator

CORROSION EVALUATION

LFP-VSL-00002 & LFP-VSL-00004 (LAW)

Melter 1 & 2 Feed Vessels

- Design Temperature (°F) (max/min): 150/40
- Design Pressure (psig) (max/min): 15/FV
- Location: process cell

Offspring items

LFP-AGT-00002, LFP-AGT-00004
LFP-PMP-00007 – LFP-PMP-00018

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

Operating Modes Considered:

- The vessel is filled with waste at up to 150°F
- The vessel will be washed with demineralized water

Assumptions:

- No steam ejector
- There will be no acid used in LAW systems (based on information from T Anderson)

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: Vessels: 316 (max 0.030%C; dual certified)

Agitator: Stellite 712 or equivalent

Recommended Corrosion Allowance: 0.04 inch (includes 0.00 inch erosion allowance)

0.125 inch required on bottom head and shell
(includes erosion and corrosion)

Process & Operations Limitations:

- Develop rinsing/flushing procedure.
- Do not allow untreated process water to remain stagnant in the vessel without approval by Materials Specialist.

Concurrence TD
Operations

0	10/14/04	Initial Issue Vessels removed from 24590-LAW-N1D-LFP-00006 due to new Process Corrosion data	DLAdler	JRDivine	APR	A/Rangus
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

LFP-VSL-00002 and LFP-VSL-00004 receive blended melter feed consisting of LAW and glass formers. Mechanical agitators are present in vessel for blending. Agitators are maintainable and replaceable

a General Corrosion

Hamner (1981) lists a corrosion rate for 304 (and 304L) in NaOH of less than 20 mpy (500 $\mu\text{m}/\text{y}$) at 77°F and over 20 mpy at 122°F. He also states 316 (and 316L) has a rate of less than 2 mpy in 50% NaOH at temperatures up to 122°F. Dillon (2000) and Sedriks (1996) both state that the 300 series alloys are acceptable in up to 50% NaOH at temperatures up to about 122°F or slightly above. Similar results were observed by Edgemon et al (1995) for the 242-A Evaporator at Hanford. Recent testing at PNNL (2004) showed corrosion rates of Stellite 12 and 712, Ultimate and 316L to be less than 1 mpy.

In this system, the normal pH, nitrate concentrations and temperatures are such that 304L and 316L stainless steels will be acceptable

Conclusion:

304L, 316L, Ultimet, and Stellite 12 and 712 are expected to be sufficiently resistant to the waste solution with a probable general corrosion rate of less than 1 mpy.

b Pitting Corrosion

Chloride is known to cause pitting of stainless steels and related alloys in acid and neutral solutions. Dillon (2000) is of the opinion that in alkaline solutions, pH>12, chlorides are likely to promote pitting only in tight crevices such as might form after partial removal of deposits during multiple rinse cycles. Dillon and Koch (1995) are both of the opinion that fluoride will have little effect in an alkaline media. Edgemon et al (1995) did not observe pitting in the 242-A Evaporator but the chloride concentrations were only about 0.2% of those in this system.

Nominal operating temperature is 122°F with a range of 77 to 150°F. At this temperature, 304L or 316L stainless steels would be acceptable in the proposed alkaline-nitrate waste in the absence of concentrating effects

If the vessel were filled with process water and left stagnant, there would be a tendency to pit. The time to initiate would depend on the source of the water, being shorter for filtered river water and longer for DIW. Pitting has been observed in both cases, and is likely because residual chlorides are likely to remain.

Conclusion:

Localized corrosion, such as chloride induced pitting, is common but can be mitigated using alloys with higher nickel and molybdenum contents. Based on the expected operating conditions, 316L is expected to be satisfactory

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

Not applicable to this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, the environment and also because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), chloride stress corrosion cracking does not usually occur below about 140°F. With the proposed temperatures, either 304L or 316L is acceptable. No cracking has been observed in similar waste (Zapp, 1998) at temperatures to about 266°F.

Conclusion:

At the normal operating conditions 304L and 316L stainless are acceptable, although 316L is recommended

e Crevice Corrosion

At the proposed operating conditions, 316L is the minimum recommended. See Pitting

Conclusion:

See Pitting.

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system under the stated operating conditions

CORROSION EVALUATION

g Microbiologically Induced Corrosion (MIC)

The normal operating conditions are not conducive to microbial growth.

Conclusion:

MIC is not considered a problem.

h Fatigue/Corrosion Fatigue

Corrosion fatigue does not appear to be a concern.

Conclusions

Not expected to be a concern.

i Vapor Phase Corrosion

Vapor phase corrosion will be a function of the degree of agitation, solution chemistry, and temperature. Under the stated, conditions, and assuming agitation, 316L will be required.

Conclusion:

Not expected to be a concern.

j Erosion

Velocities at the walls and bottom of the vessels are expected to be below 10 f/s. The wear of the vessel bottom and wall due to both erosion and corrosion is expected to be below 0.125 inch of 316L stainless steel based on 24590-WTP-M0E-50-00002.

Conclusion:

A minimum corrosion allowance on the bottom head and shell of 0.125 inch is recommended. Agitator blades should be Stellite 712. Ultimet is acceptable if the agitator design takes into consideration Ultimet's higher wear rate.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No significantly dissimilar metals are present.

Conclusion:

Not expected to be a concern.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, the design does not provide for the presence of nitric acid reagent in this system.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-M0E-50-00002, *Increases the Wear Rate of Vessels Containing Glass Formers to Account for the Increased Velocities Along the Bottom Head Wall and to Account for Perpendicular Flow Against the Bottom Head and Wall*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. CCN 079661, Perform Scoping Studies To Determine The Suitability Of Construction Materials To Caustic Environments, 12 March 2004
4. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, in "Metals Handbook", ASM International, Metals Park, OH 44073
5. Dillon, CP (Nickel Development Institute), Personal Communication to J R Divine (ChemMet, Ltd., PC), 3 Feb 2000.
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7. Hammer, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
8. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
9. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158
10. Zapp, PE, 1998, *Preliminary Assessment of Evaporator Materials of Construction*, BNF—003-98-0029, Rev 0, Westinghouse Savannah River Co., Inc for BNFL Inc

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2. Anderson, TD, 21 December 2000, to JR Divine: No provision for adding nitric or other acid.
3. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
4. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
5. Miles RE, 2001, Telecon to JR Divine, *LAW and HLW Gamma Radiation Exposures Estimates*, RPP-WTP, Richland, WA 99352
6. Ohl, PC to PG Johnson, Internal Memo, Westinghouse Hanford Co, *Technical Bases for Cl- and pH Limits for Liquid Waste Tank Cars*, MA: PCO:90/01, January 16, 1990.
7. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
8. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) Melter 1 & 2 feed vessel (LFP-VSL-00002, LFP-VSL-00004)

Facility LAW

In Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	4.10E+01	3.84E+01			
Chloride	g/l	1.18E+01	1.29E+01			
Fluoride	g/l	1.18E+01	1.30E+01			
Iron	g/l	1.82E+00	1.87E+00			
Nitrate	g/l	1.75E+02	1.86E+02			
Nitrite	g/l	5.26E+01	5.75E+01			
Phosphate	g/l	3.80E+01	4.06E+01			
Sulfate	g/l	2.03E+01	2.21E+01			
Mercury	g/l	6.19E-01	2.03E-02			
Carbonate	g/l	8.41E+01	7.12E+01			
Undissolved solids	wt%	44%	43%			
Other (Pb)	g/l	4.50E-01	2.83E-02			
Other	g/l					
pH	N/A					Note 2
Temperature	°F					Note 3, Note 4
List of Organic Species:						
References						
System Description: 24590-LAW-3YD-LFP-00001, Rev 0						
Mass Balance Document: 24590-WTP-MAC-V11T-00005, Rev A						
Normal Input Stream #: LFP05						
Off Normal Input Stream # (e.g., overflow from other vessels): N/A						
P&ID: 24590-LAW-M6-LFP-00001, 24590-LAW-M6-LFP-00003, Rev 1						
PFD: 24590-LAW-M5-V17T-00001, -00002, Rev 4						
Technical Reports: N/A						
Notes:						
1. Concentrations less than 1×10^{-4} g/l do not need to be reported; list values to two significant digits max.						
2. pH 13.9 to 14.7 (24590-WTP-MAC-V11T-00005, Rev A)						
3. T operation: 77 °F to 160 °F, T nominal 122 °F (24590-LAW-MVC-LFP-00001, Rev C)						
4. The 150 F is maximum temperature from pretreatment and no additional design margin is required.						
Assumptions:						

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data**6.2.2 Melter 1 and Melter 2 Feed Vessels (LFP-VSL-00002 and LFP-VSL-00004)****Routine Operations**

The melter feed vessels (MFVs) (LFP-VSL-00002 and LFP-VSL-00004) receive blended melter feed, consisting of LAW and glass formers, from the MFPVs. Each MFV, like each MFPV, is sized to supply melter feed for 16 hours of operation to a melter operating at a glass production rate of 15 t/day/melter. Each MFV is equipped with the following:

- One mechanical agitator with current
- Air displacement slurry (ADS) pumps to transfer feed to the corresponding LAW melter
- One vertical pump
- Liquid level indicators and control
- Density indicator
- Pressure indicator
- Temperature indicator
- Rotary vessel cleaning jets for periodic vessel washdown
- Overflow line to the corresponding MFPV

The agitators will blend the glass formers and concentrate to a homogeneity criteria that ensures that the final product will meet qualification requirements.

The agitators and pumps are expected to require maintenance and/or replacement during the life of the plant. The wet process cell is designed to allow for replacement of the vessels (not expected), agitators, and pumps.

The ADS Pump, lines, and nozzles are water flushed once every 2 to 4 hours, after every pump shutdown and before initiation of feed to the melter. Flush water is transferred directly to melter.

The agitators and pumps are expected to fail within the lifetime of the plant. The facility is designed to allow for replacement of agitators and pumps. ADS pumps were selected for their few moving parts to minimize maintenance. The lines from the ADS pumps to the melter are flexible hoses designed to resist effects of thermal stress and distortions.

Each MFV interfaces with autosampling system ASX-SAMPLER-00011 (24590-LAW-M6-ASX-00001). Before a sample is taken, the melter feed is pumped through a sample circulation loop. The sampler will pull a portion of the process stream from the circulation loop.

Non-Routine Operations that Could Affect Corrosion/Erosion

- Overflows to LFP-VSL-00001 or LFP-VSL-00003
- Washing required on failure of agitator



24590-LAW-N1D-LOP-00003

Rev. 3

CORROSION EVALUATION**LOP-WESP-00001 & LOP-WESP-00002 (LAW)****Melter 1 and Melter 2 Wet Electrostatic Precipitator (WESP)**

- Design Temperature (°F)(max/min): 170/45
- Design Pressure (psig)(max/min): -1/+1
- Location: incell

ISSUED BY
RPPWTP PDC**Contents of this document are Dangerous Waste Permit affecting****Operating conditions are as stated on attached Process Corrosion Data Sheet****Operating Modes Considered:**

- The vessel is at stated pH and at minimum stated temperature, 122°F
- The vessel is at stated pH and at maximum stated temperature, 170°F

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18		X
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: UNS N08367**Recommended Corrosion Allowance: 0.040 inch (includes 0.024 inch corrosion allowance and 0.004 inch erosion allowance)****Process & Operations Limitations:**

- Develop a rinse/flush procedure
- Develop a lay-up strategy

Concurrence DMB
Operations

3	5/15/05	Update wear allowance based on 24590-WTP-RPT-M-04-0008			NA	
2	8/11/04	Incorporate new PCDS Add section p – Inadvertent Addition of Nitric Acid	DLAdler	JRDivine	NA	APRangus
1	1/29/04	Update quantity Update equipment description Update design temp/pressure Re-format references Remove reference to open issues Append updated MSDS Add DWP note	DLAdler	JRDivine	APR	APRangus
0	1/29/02	Initial Issue	JRDivine	DLAdler	NA	BPosta
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

The WESPs provide further removal of aerosols from the offgas after initial aerosol and soluble gas removal in the SBS. Spray wash rings are available for washdown when required. Process air is used to keep the conductors clean and dry.

a General Corrosion

Little uniform corrosion is expected for the stated conditions. Either 304L or 316L would be suitable.

Conclusion:

304L or 316L would be acceptable for the conditions stated.

b Pitting Corrosion

Chloride is known to cause pitting in acid and neutral solutions. The normal operating range of temperature for this vessel is 122 °F to 140 °F at a pH in the range 0.71 to 1.57. Data from Phull et al (2000) imply that with these conditions, a 6% Mo alloy or the equivalent will be needed at temperatures above 150°F. With the higher temperature, and expected pH below about 6, a more resistant alloy than 304L or 316L is required.

In addition, because of the high electrical potentials involved, the environment may be more oxidizing than is common. Consequently a strongly pitting resistant alloy is needed.

Further, there would be a tendency to pit if the vessel were filled with process water and left stagnant. The time to initiate would depend on the source of the water, being shorter for filtered river water and longer for DIW. Pitting has been observed in both cases, and is likely caused by residual chlorides. Pitting is less likely for the higher alloys such as a 6% Mo alloy. The use of an alloy with $\leq 0.5\%$ Cu is recommended to minimize the effects of mercury.

Conclusion:

Based on the stated operating conditions, 6% Mo is the minimum alloy acceptable.

c End Grain Corrosion

End grain corrosion only occurs in high acid conditions.

Conclusion:

Not believed likely in this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, the environment, and also because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. For the normal operating conditions with good flushing, 316L would be satisfactory. However, with the possible off-normal conditions where there will be a tendency to concentrate salts, a 6% Mo alloy is recommended.

Conclusion:

For the normal operating environment, 316L is satisfactory. However, off normal conditions dictate the necessity for a more resistant alloy such as a 6% Mo.

e Crevice Corrosion

WESPs are known to accumulate solid deposits. Because the solids will probably contain halides, crevice corrosion will be likely. A 6% Mo is recommended. Also see pitting.

Conclusion:

A 6% Mo should be used.

f Corrosion at Welds

Weld corrosion is not expected to be a problem.

Conclusion:

Weld corrosion is not believed to be a problem for this system.

g Microbiologically Induced Corrosion (MIC)

The proposed operating conditions are not conducive to microbial growth – the average operating temperature is approximately correct but the pH is too acid.

Conclusion:

MIC is not considered a problem.

CORROSION EVALUATION

h Fatigue/Corrosion Fatigue

Corrosion fatigue is not a concern in a properly designed unit.

Conclusions

Not expected to be a concern.

i Vapor Phase Corrosion

The vapor phase portion of the vessel is expected to be contacted with particles of waste from splashing.

Conclusion:

Not expected to be a concern.

j Erosion

Velocities are expected to be low. Erosion allowance of 0.004 inch for components with low solids content (< 2 wt%) at low velocities is based on 24590-WTP-RPT-M-04-0008.

Conclusion:

Not expected to be a concern.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No metal/metal contacting surfaces expected.

Conclusion:

Not expected to be a concern.

m Galvanic Corrosion

No dissimilar metals are present.

Conclusion:

Not expected to be a concern.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Addition of Nitric Acid

This equipment normally operates at low pH.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. Phull, BS, WL Mathay, & RW Ross, 2000, *Corrosion Resistance of Duplex and 4-6% Mo-Containing Stainless Steels in FGD Scrubber Absorber Slurry Environments*, Presented at Corrosion 2000, Orlando, FL, March 26-31, 2000, NACE International, Houston TX 77218

Bibliography:

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5. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
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7. Hamner, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
8. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
9. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
10. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158
11. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
12. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) WESP (LOP-WESP-00001, LOP-WESP-00002)

Facility LAW

In Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	6.57E-03	6.97E-03			
Chloride	g/l	7.10E-01	7.15E-01			
Fluoride	g/l	4.88E-01	5.86E-01			
Iron	g/l	1.30E-03	1.41E-03			
Nitrate	g/l	2.35E+00	1.96E+00			
Nitrite	g/l					
Phosphate	g/l					
Sulfate	g/l					
Mercury	g/l					
Carbonate	g/l					
Undissolved solids	wt %	0.1%	0.1%			
Other (Pb)	g/l	4.52E-03	3.00E-04			
Other	g/l					
pH	N/A					Note 2
Temperature	°F					Note 3

List of Organic Species:

References

System Description: 24590-LAW-3YD-LOP-00001, Rev 0
Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A
Normal Input Stream #: LOP07
Off Normal Input Stream # (e.g., overflow from other vessels):
P&ID: 24590-LAW-M6-LOP-00001, 24590-LAW-M6-LOP-00002, Rev 1
PFD: 24590-LAW-M5-V17T-00007, -00008 Rev 4
Technical Reports:

Notes:

- Concentrations less than 1×10^{-1} g/l do not need to be reported; list values to two significant digits max.
- pH approx. 0.71 to 1.57 (24590-101-TSA-W000-0009-111-02, Rev 00B, pp. T-29 -T31)
- T operation: 122 °F to 140 °F (24590-WTP-M4C-V11T-00005, Rev A) Tmax 170 °F (24590-WTP-3PS-MKE0-T0001)

Assumptions:

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

6.3.2 Wet Electrostatic Precipitators (LOP-WESP-00001,2)

Routine Operations

After initial aerosol and soluble gas removal in the SBS is routed to the wet electrostatic precipitator (LOP-WESP-00001/2) for further removal of aerosols. Each melter system has a dedicated WESP.

The offgas enters the unit and passes through a distribution plate. The evenly distributed saturated gas then flows upward through the tubes of the WESP. The tubes act as positive electrodes. Each tube also has a single negatively charged electrode that runs down the center of the tube. A high voltage transformer/rectifier supplies the power to these electrodes. A strong electric field is generated along the electrode, giving a negative charge to aerosols as they pass through the tubes. The negatively charged aerosols move towards the positively charged tube walls and are intercepted. The inlet is also provided with an inlet spray to enhance rundown and cleaning. The condensate then drains into the C3/C5 drain/sump collection vessel (RLD-VSL-00004). Each WESP is equipped with a spray wash ring for washdown when required.

Process air is added through the electrical ducts to keep the conductors clean and dry. Downstream of the WESPs, the individual offgas lines and the vessel vent header join.

Non-Routine Operations that Could Affect Corrosion/Erosion

- **Loss of electrical power** - Loss of power, whether offsite or in the WESP electrical system, causes the system to pass particulates, therefore loading the HEPA filters faster. The melter is idled until power is restored.
- **Loss of one or more electrodes** - Loss of one or more electrodes results in lowered equipment efficiency, causing a more rapid HEPA loading. To correct the problem, the melter is idled and the maintenance bypass is used until repairs are made on the WESP. If decreased efficiency is not significant, maintenance is performed at the next melter changeout.

CORROSION EVALUATION

LVP-TK-00001 (LAW)
CAUSTIC COLLECTION TANKISSUED BY
RPP-WTP PDC

- Design Temperature (°F)(max/min): 180/50
- Design Pressure (psig): per Code
- Location: outcell

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: 316 (max 0.030% C; dual certified)

Recommended Corrosion Allowance: 0.04 inch (includes 0.024 inch corrosion allowance and 0.004 inch erosion allowance)

Process & Operations Limitations:

- None

Concurrence DMB
Operations

2	5/26/05	Update wear allowance based on 24590-WTP-RPT-M-04-0008	DLAdler	JRDivine	NA	APRangus
1	7/8/04	Change item number from VSL to TK Correct description Update design temp/pressure Incorporate new PCDS Information regarding inadvertent nitric acid addition Re-format references Add DWP note	DLAdler	JRDivine	APR	APRangus
0	3/6/02	Initial Issue	JRDivine	DLAdler	NA	SKirk
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

The tank receives scrubbing liquid from LVP-SCB-00001. It will operate at about 140 to 150 °F and range in pH from 7 to 12 with a nominal value of 9.

a General Corrosion

Hamner (1981) lists a corrosion rate for 304 (and 304L) in NaOH of less than 20 mpy (500 $\mu\text{m}/\text{y}$) at 77°F and over 20 mpy at 122°F. He shows 316 (and 316L) has a rate of less than 2 mpy up to 122°F and 50% NaOH. Dillon (2000) and Sedriks (1996) both state that the 300 series are acceptable in up to 50% NaOH at temperatures up to about 122°F or slightly above. Indications are that in the present system, the uniform corrosion rate is negligible.

Conclusion:

304L or 316L are acceptable for use in the stated conditions.

b Pitting Corrosion

Chloride is likely to cause pitting in acid and slightly alkaline solutions. Berhardsson et al (1981) suggest that at chloride concentrations of a few hundred parts per million, a temperature of 150°F would be compatible with 316L. At the stated concentrations of 800 to 1900 ppm chloride and the given temperatures, pitting will be a strong function of pH. At the nominal pH of 9 or higher, 316L is satisfactory. Should the halide concentrations rise above nominal, the pH of the solution will need to be adjusted to at least 12.

If the solution will remain below about pH 7 for any length of time at 150°F, 6% Mo or better should be used. Phull et al (2000) note that 6% Mo is acceptable to about pH 5 and 150°F in high chloride environments. Lower pH values and higher temperatures would require Hastelloy C-22 or the equivalent.

Conclusion:

Localized corrosion, such as pitting, is a concern. However, 316L is satisfactory for the nominal halide concentrations, pH and temperature and assuming that the pH will be adjusted should the halide concentrations rise above nominal.

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

Not believed likely in this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, and the environment. But it is also unknown because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), stress corrosion cracking does not usually occur below about 140°F. Berhardsson (1981) suggests that 316L is acceptable under these conditions up to a temperature of about 150°F.

Conclusion:

Under the normal operating environment, 316L is recommended.

e Crevice Corrosion

Although crevice corrosion is possible, the same alloy choices as for pitting are acceptable. Also see Pitting.

Conclusion:

See Pitting

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system.

g Microbiologically Induced Corrosion (MIC)

Typically, MIC is not encountered in operating systems.

Conclusion:

MIC is not considered a problem.

h Fatigue/Corrosion Fatigue

Corrosion fatigue is not expected to be a problem.

Conclusions

Not expected to be a concern.

CORROSION EVALUATION

i Vapor Phase Corrosion

The vapor phase portion of the vessel is expected to be contacted with particles of waste from splashing. It is unknown whether this will be sufficiently washed or whether residual acids or solids will be present. Because solids or acids and solids may be present, a 316L or better would be preferred.

Conclusion:

Vapor phase corrosion is not a concern.

j Erosion

Velocities are expected to be low. Erosion allowance of 0.004 inch for components with low solids content (< 2 wt%) at low velocities is based on 24590-WTP-RPT-M-04-0008.

Conclusion:

Erosion is not a concern.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No dissimilar metals are present.

Conclusion:

Not applicable.

n Cavitation

None expected.

Conclusion:

Not a concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, nitric acid reagent is not available in this system.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-LAW-MKE-LVP-00004, *LAW Melters Offgas Caustic Scrubbers (LVP-SCB-00001) Process Conditions And Requirements*
2. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
3. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
4. Berhardsson, S, R Mellstrom, and J Oredsson, 1981, *Properties of Two Highly corrosion Resistant Duplex Stainless Steels*, Paper 124, presented at Corrosion 81, NACE International, Houston, TX 77218
5. CCN 088587, Meeting Minutes from 6/1/2004 meeting with the following purpose: LAW Caustic Scrubber pH Requirements to Address ICD-6 and Material Selection, by Scott Colby
6. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
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5. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) Caustic Scrubber (LVP-SCB-00001), Caustic Collection Tank (LVP-TK-00001)Facility LAWIn Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l					
Chloride	g/l	8.64E-01	1.87E+00			
Fluoride	g/l	2.21E+00	4.78E+00			
Iron	g/l					
Nitrate	g/l	3.84E+00	8.28E+00			
Nitrite	g/l					
Phosphate	g/l					
Sulfate	g/l					
Mercury	g/l					
Carbonate	g/l					
Undissolved solids	wt %					
Other (Pb)	g/l					
Other	g/l					
pH	N/A					
Temperature	°F					Note 2

List of Organic Species:

References

System Description: 24590-LAW-3YD-LDP-00001, Rev 0
 Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A.
 Normal Input Stream #: LVP17
 Off Normal Input Stream # (e.g., overflow from other vessels): N/A
 P&ID: 24590-LAW-M8-LVP-00002, Rev 0
 PFD: 24590-LAW-M5-V17T-00011, Rev 4
 Technical Reports: N/A

Notes:

1. Concentrations less than 1×10^{-4} g/l do not need to be reported; list values to two significant digits max.
 2. Normal inlet offgas temp is 560 °F maximum unquenched inlet offgas temp is 1025 °F per 24590-LAW-MKD-LVP-00011, Rev C;
 caustic scrubber blowdown 142 °F to 149 °F (24590-WTP-M4C-V11T-00005, Rev A).

Assumptions:

Note 3: Tank has a nominal pH of 9 (24590-LAW-MKE-LVP-00001). Should high halides, greater than 0.3 g/l (CCN 088587), be detected in the scrubber upstream, the pH will be raised to 14.

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

6.4.9 Caustic Scrubber and Caustic Collection Tank (LVP-SCB-00001, LVP-TK-00001)

Routine Operations

The caustic scrubber (LVP-SCB-00001) further treats the offgas by removing acid gases such as SO_x and CO_2 . It also provides offgas cooling.

The offgas stream enters the bottom side of the scrubber and flows upward through a packed bed. The offgas flows countercurrent to the scrubbing liquid, which is introduced through a distributor at the top of the packed section of the column and flows downward through the packing media. Contaminants in the offgas stream are absorbed into the liquid.

The offgas is cooled through the scrubber by evaporation of scrubbing liquid and exits at nearly 100 % relative humidity. The scrubbing liquid drains into the caustic collection tank (LVP-TK-00001). This liquid is recirculated to the top of the column using the caustic scrubber recirculation pumps (LVP-PMP-00001A/B).

The vessel is fitted with radar type liquid level instrumentation. Density, temperature, and flow are measured on the recirculation line. Capability for sampling the vessel is provided using a tap from the recirculation pump line. The vessel is vented to the room. The caustic collection vessel (LVP-VSL-00001) overflows to the berm around the vessel.

Water is added directly to the vessel at a rate sufficient to maintain a specific gravity in the scrubbing fluid consistent with a maximum of 10 % dissolved solids. Suspended solids are not expected.

Offgas from the caustic scrubber is environmentally monitored (stack discharge monitoring [rad and non-rad] system [SDJ]) then released via the stack.

Non-Routine Operations that Could Affect Corrosion/Erosion

- The caustic scrubber has provisions for process water addition for startup and to provide makeup water as necessary. A spray wash ring is also provided for washdown during maintenance periods.
- If the caustic scrubber needs maintenance, a bypass line is provided to allow continued operation of the main offgas system after the melters are idled.
- **Loss of caustic flow to the collection tank** - Loss of caustic flow results in decreased pH of the scrubber bottoms. If the problem can be resolved readily, the scrubber column can continue operating, since the pH decreases slowly. If the problem is more serious, the melters are idled and the caustic scrubber bypass is activated until caustic flow is reestablished.
- **Loss of recirculation pumps** - Loss of recirculation results in the inability to remove acid gases and iodine. An installed spare pump is provided to quickly restore flow to the column.
- **Plugging of packed bed** - If the pressure drop across the packed bed increases beyond a normal range, the melters are idled, the column is bypassed, and the bed is flushed to remove deposits. If this is not effective, the melters are idled, the bypass opened, and the bed replaced.
- **Caustic collection vessel overflow** - The vessel overflows to the berm around the tank. The berm drains to the plant wash vessel (RLD-VSL-00003).

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

- **Solids buildup in the caustic collection vessel** - Minimal solids are expected in the caustic collection vessel. When not transferring to the PT facility, the transfer pumps recirculates back to the collection tank. Caustic is injected into the pump suction to maintain the correct pH in the tank. Any solids are removed from the vessel, and the liquid is transferred to the PT facility.
- **Loss of transfer pump** - If the primary pump fails, the backup pump is activated and operated while the failed pump is replaced.

CORROSION EVALUATION

RLD-VSL-00004 (LAW)

C3/C5 Drains/Sump Collection Vessel

- Design Temperature (°F)(max/min): 183/-20
- Design Pressure (psig) (max/min): 15/FV

ISSUED BY
RPP-WTP PDC

R10433505

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

Can be maintained, not replaced, during the 40 y design life. No method of totally removing solids or heels is present.

Operating Modes Considered:

- The tank is filled with waste at 115°F and drain waste
- Rinsed with plant water, a heel is expected to remain

Materials Considered:

Material (UNS No.,)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1	X	

Recommended Material: 316 (max 0.030% C; dual certified). Bottom head to be clad with 0.1 inch of Inco 625 (UNS N06625) material or better.

Recommended Corrosion Allowance: 0.040 inch (includes 0.024 inch corrosion allowance and 0.016 inch erosion allowance)

Process & Operations Limitations:

- Develop lay-up strategy

Concurrence DMB
Operations

5	3/28/06	Update wear allowance based on 24590-WTP-RPT-M-04-0008			NA	
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

REVISION HISTORY

4	7/1/04	Incorporate new PCDS Add Section p – Inadvertent Addition of Nitric Acid	DLAdler	JRDivine	NA	APRangus
3	4/3/03	Update design temp/pressure Append updated MSDS Add DWP note Extensive revisions to the text; no revision bars used.	DLAdler	JRDivine	NA	MHoffmann
2	9/17/02	Remove wording regarding open issues	DLAdler	JRDivine	SS	MHoffmann
1	4/29/02	Modify Material Recommendation	DLA	JRD	SS	SK
0	4/2/02	Initial Issue	DLAdler	JRDivine	NA	SK
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

RLD-VSL-00004 is designed to receive fire water from the C3/C5 area in case the sprinkler system is activated. RLD-VSL-00004 also collects liquid purge drained from the LOP-WESP-00001/2. It could also possibly receive overflow from the concentrate receipt vessels and washes from various other vessels.

a General Corrosion

Wilding and Paige (1976) have shown that in 5% nitric acid with 1,000 ppm fluoride at 290°F, the corrosion rate of 304L and 316L can be kept as low as 5 mpy by the use of Al^{+++} . The fluoride concentration in this situation is 566 ppm, the normal operating pH ranges from 0.71 to 1.57, and the normal operating temperature is 115°F. Based on the available data, the uniform corrosion rate will be small.

Conclusion:

304L and 316L are expected to be sufficiently resistant to the waste solution with a probable general corrosion rate of less than 1 mpy.

b Pitting Corrosion

Chloride is known to encourage pitting of stainless steel and related alloys in acid and neutral solutions. Alloys with higher molybdenum contents are more resistant to pitting. The stated conditions of pH and chloride conditions for this vessel are sufficient to cause 316L to be a marginal choice. However, with the cladding of the bottom head with a more resistant alloy, 316L is deemed satisfactory.

Conclusion:

Localized corrosion, such as pitting, is common but can be mitigated, if caused by chlorides, by alloys with higher nickel and molybdenum contents. Based on the expected operating conditions, 316L would be expected to be satisfactory with the addition of cladding of the bottom head.

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

End grain corrosion, as normally defined, is not a concern.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, the environment, and because chloride tends to concentrate under heat transfer conditions. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), chloride stress corrosion cracking does not usually occur below about 140 °F. Further, the "L" grade stainless steels are more resistant. With the proposed conditions, 316L will be acceptable.

Conclusion:

For the normal operating environment, a 316L is the minimum recommended.

e Crevice Corrosion

Though the solids content is not excessive under normal operations, there is no good method for removing all deposits or heels. At the proposed operating temperature, 304L and 316L alone are not acceptable. Either cladding the bottom head of the vessel is necessary or 6% Mo alloy or better is recommended. In addition, see Pitting.

Conclusion:

See Pitting.

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system under normal operating conditions.

g Microbiologically Induced Corrosion (MIC)

The normal operating conditions are not conducive to microbial growth.

Conclusion:

MIC is not considered a problem.

h Fatigue/Corrosion Fatigue

Corrosion fatigue does not appear to be a concern in the vessel.

Conclusions

Not a concern.

CORROSION EVALUATION

i Vapor Phase Corrosion

Vapor phase corrosion will be a function the degree of agitation, solution chemistry, and temperature. Under normal operating conditions, vapor phase corrosion is not expected to be a concern.

Conclusion:

Not believed to be a concern. 316L is expected to be satisfactory.

j Erosion

Velocities are expected to be low. Erosion allowance of 0.016 inch for components with solids content up to 27.3 wt% at velocities less than 4 mps is based on 24590-WTP-RPT-M-04-0008. Although the solids content can reach 43.9 wt% during non-routine operations, the vessel normally has solids content less than 0.1 wt% and 0.016 inch is considered an adequate erosion wear allowance.

Conclusion:

Not expected to be a problem.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No significantly dissimilar metals are present.

Conclusion:

Not expected to be a concern.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, the design does not provide for the presence of nitric acid reagent in this system. Additionally, the vessel sees low pH under normal operating conditions.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. CCN 092184, Memo from Dolores Mitchell to Jim Divine, 11 June 2004, "Update to RLD-VSL-00004 Process Corrosion Data"
4. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
5. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
6. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158
7. Wilding, MW and BE Paige, 1976, *Survey on Corrosion of Metals and Alloys in Solutions Containing Nitric Acid*, ICP-1107, Idaho National Engineering Laboratory, Idaho Falls, ID

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2. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
3. Hammer, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
4. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
5. Ohl, PC to PG Johnson, Internal Memo, Westinghouse Hanford Co, *Technical Bases for Cl- and pH Limits for Liquid Waste Tank Cars*, MA: PCO:90/01, January 16, 1990.
6. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
7. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International. Houston, TX 77084

CORROSION EVALUATION

CCN 092184

UPDATE TO RLD-VSL-00004

PROCESS CORROSION DATA

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) C3/C5 drains/sump collection vessel (RLD-VSL-00004)

Facility LAW

In Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine (Note 3)		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	8.57E-03	6.97E-03	4.10E+01	3.84E+01	
Chloride	g/l	7.10E-01	7.15E-01	1.84E+01	2.00E+01	
Fluoride	g/l	4.88E-01	5.66E-01	1.84E+01	2.01E+01	
Iron	g/l	1.39E-03	1.41E-03	2.84E+00	2.90E+00	
Nitrate	g/l	2.35E+00	1.96E+00	2.73E+02	2.89E+02	
Nitrite	g/l			8.22E+01	8.93E+01	
Phosphate	g/l			5.93E+01	6.30E+01	
Sulfate	g/l			3.16E+01	3.43E+01	
Mercury	g/l			9.48E-02	3.18E-02	
Carbonate	g/l			1.29E+02	1.11E+02	
Undissolved solids	wt %	0.1%	0.1%	43.9%	43.3%	
Other (Pb)	g/l	4.52E-03	3.00E-04	6.89E-01	2.94E-02	
Other	g/l					
pH	N/A					Note 4, Note 5
Temperature	°F					Note 2

List of Organic Species:

References

System Description: 24590-LAW-3YD-30-00001, Rev 0

Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A

Normal Input Stream #: LOP10 (or LOP07 from WESP)

Off Normal Input Stream #: (e.g., overflow from other vessels): Note 3

P&ID: 24590-LAW-M6-RLD-00002, Rev 3

PFD: 24590-LAW-M5-V11T-00014, Rev 4

Technical Reports: N/A

Notes:

1. Concentrations less than 1×10^{-4} g/l do not need to be reported; list values to two significant digits max.
2. T routine Operation 115°F (cooling occurs via transfer and from other input/flush streams).
3. Non-routine is max concentration from overflow of LCP, LFP vessels, and RLD-VSL-00003.
4. pH 0.71 to 1.57 (24590-101-TSA-W000-0009-111-02, Rev. 00B, ppT30,T32)
5. Non-routine pH 1 to 8, same as RLD-VSL-00003.

Assumptions:

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data**6.6.2 C3/C5 Drains/Sump Collection Vessel (RLD-VSL-00004)****Routine Operations**

The C3/C5 drains/sump collection vessel (RLD-VSL-00004) and its cell are designed to contain the most probable maximum amount of fire protection water necessary to cover the largest C3/C5 area, approximately 30,000 gallons. In the event of a fire and activation of the sprinkler system, the fire water will drain into the vessel through floor drains. Once the volume reaches the overflow level of the vessel, the contents will overflow onto the floor of the C3/C5 cell. The sump pump transfers the contents of the cell to the plant wash vessel (RLD-VSL-00003).

The C3/C5 drains/sump collection vessel also collects a constant liquid purge gravity drained from the wet electrostatic precipitators (LOP-WESP-00001 and LOP-WESP-00002).

The vessel is equipped with:

- A centrifugal transfer pump
- Vessel mixing eductors
- A centrifugal pump
- Level instruments
- Density instruments
- Temperature instruments pressure

The C3/C5 drains/sump collection vessel pumps are centrifugal pumps and are used to discharge to the SBS condensate collection vessel (RLD-VSL-00005) or to the plant wash vessel (RLD-VSL-00003). Routine process-related effluent from WESP drains can be pumped out daily to the SBS condensate collection vessel (RLD-VSL-00005). Effluent generated from other sources will be periodically pumped to the plant wash vessel (RLD-VSL-00003) when it reaches a predetermined level. Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit.

Non-Routine Operations that Could Affect Corrosion/Erosion

The overflow from the concentrate receipt vessels (LCP-VSL-00001 and LCP-VSL-00002) and the melter feed preparation vessels (LFP-VSL-00001 and LFP-VSL-00003) is also routed to this vessel.

The C3/C5 drains/sump collection vessel (RLD-VSL-00004) overflows to a sump (RLD-SUMP-00028) in the same cell. This sump is emptied by a pump (RLD-PMP-00004) into the plant wash vessel (RLD-VSL-00003).

The vessel can also be washed down with internal spray nozzles (RLD-NOZ-00006, RLD-NOZ-00007). If chemical adjustment is needed, reagents can be introduced through the spray nozzles.

The C3/C5 drains/sump collection vessel also receives washes from vessels.

Eductors in the C3/C5 drains/sump collection vessel (RLD-VSL-00004) and pumps with recirculation capability are operated to suspend captured solids. Suspended solids are entrained into the effluent and are periodically removed from the vessels when the vessel contents are pumped to the specified vessel in PT. If necessary, vessels can be flushed with water.

CORROSION EVALUATION



RLD-VSL-00005 (LAW)

SBS Condensate Collection Vessel

ISSUED BY
RPP-WTP PDC

Offspring items

RLD-AGT-00002, RLD-PMP-00003A/B

- Design Temperature (°F)(max/min): 200/40
- Design Pressure (psig) (max/min): 15/FV
- Location: incell

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

There is an agitator but there is no method for totally removing deposits or heels.

Operating Modes Considered:

- Only operation to the design temperature is assumed.

Materials Considered:

Material (UNS No.,)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18		X
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: UNS N08367/N08926

Top head: 316 (max 0.030% C; dual certified)

The pH, high chloride, and solids require a 6% Mo material for body of vessel and an Alloy 22 or 6% Mo material for the process nozzles consistent with the connecting piping.

Recommended Corrosion Allowance: 0.040 inch (includes 0.024 inch corrosion allowance and 0.004 inch erosion allowance)

Process & Operations Limitations:

- Develop lay-up strategy
- Develop rinsing/flushing procedure

Concurrence DMB
Operations

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER
3	5/25/05	Update wear allowance based on 24590-WTP-RPT-M-04-0008	DLAdler	JRDivine	NA	APRangus
2	6/23/04	Incorporate new PCDS Add Section p – Inadvertent Addition of Nitric Acid	DLAdler	JRDivine	NA	APRangus
1	11/18/03	Update format and assoc. items Append updated MSDS Editorial changes Add DWP note	DLAdler	JRDivine	NA	APRangus
0	10/16/02	Initial Issue	DLAdler	JRDivine	SS	SMKirk

CORROSION EVALUATION

Corrosion Considerations:

This vessel receives effluent from SBS column vessels, SBS condensate vessels, the C3/C5 drains/sump collection vessel, and the plant wash vessel as well as vessel washings. Agitators are present to maintain solids in suspension.

a General Corrosion

Wilding and Paige (1976) have shown that in 5% nitric acid with 1,000 ppm fluoride at 290°F, the corrosion rate of 304L and 316L can be kept as low as 5 mpy by the use of Al⁺⁺⁺. Additionally, Sedriks (1996) has noted with 10% (≈2N) nitric acid and 3,000 ppm fluoride at 158°F, the corrosion rate of 304L and 316L is over 4,000 mpy. The fluoride concentration in this situation is about 2870 ppm, the nitric acid concentration is about 0.3 M, and the highest normal operating temperature is 104°F. Based on the available data, the uniform corrosion rate will be small.

Conclusion:

At the given conditions, 304L or 316L are both acceptable based on uniform corrosion.

b Pitting Corrosion

Chloride is known to cause pitting in acid and neutral solutions. Phull (2000) has shown that at pH 5, 9,000 ppm chloride, and a temperature of about 122°F, a 6% Mo alloy is satisfactory. In this situation, the pH is significantly lower, as low as 1 rather than 5, and the chloride concentration is significantly higher. According to Sedriks (1996), a 6% Mo is acceptable to about 160°F though if the welds are not properly cleaned, the temperature at which pitting initiates can drop to about 85°F. Wilding & Paige (1976) have shown that in 42% nitric acid, concentrations of over 4,000 ppm chloride have no effect on 304L stainless steel. If the effect is assumed linear and if it is assumed 316L can accept twice as much chloride as 304L without a negative effect, then in 0.3 M nitric acid (≈2%), the maximum allowable chloride concentration should be about 400 ppm which is much less than the concentrations stated to be present during normal operating conditions.

Conclusion:

It is known that nitrate mitigates the effects of chloride to a degree. Even if the protective effect was linear, more chloride is present and the pH is lower than is acceptable for 316L. Therefore an alloy such as a 6% Mo or equivalent is necessary.

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

Not likely in this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, and the environment. But it is also unknown because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), stress corrosion cracking does not usually occur below about 140°F. With the proposed conditions, 316L will not be acceptable. More resistant alloys such as 6% Mo alloys or better will be needed.

Conclusion:

A 6% Mo alloy or better is necessary.

e Crevice Corrosion

Most alloys are expected to be susceptible to crevice corrosion with alloys higher than 300 series stainless steels being less susceptible. See also Pitting.

Conclusion:

See Pitting

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system.

g Microbiologically Induced Corrosion (MIC)

The proposed operating conditions are suitable for microbial growth but the system is downstream of the main entry points of microbes.

Conclusion:

MIC is not considered a problem.

CORROSION EVALUATION

h Fatigue/Corrosion Fatigue

Corrosion fatigue is not expected to be a problem if the piping and nozzles are properly supported.

Conclusions

Not a concern.

i Vapor Phase Corrosion

Vapor phase corrosion is not expected to be a concern.

Conclusion:

Not a concern.

j Erosion

Velocities are expected to be low. Erosion allowance of 0.004 inch for components with low solids content (< 2 wt%) at low velocities is based on 24590-WTP-RPT-M-04-0008. Because of the low pH, the agitator blade can be Ultimet but it is not considered necessary. Using the same material for the agitator as the vessel is satisfactory.

Conclusion:

Not expected to be a problem.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No significantly dissimilar metals are present.

Conclusion:

Not a concern.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, the design does not provide for the presence of nitric acid reagent in this system. Additionally, the vessel sees low pH under normal operating conditions.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
4. Phull, BS, WL Mathay, & RW Ross, 2000, *Corrosion Resistance of Duplex and 4-6% Mo-Containing Stainless Steels in FGD Scrubber Absorber Slurry Environments*, Presented at Corrosion 2000, Orlando, FL, March 26-31, 2000, NACE International, Houston TX 77218.
5. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc , New York, NY 10158
6. Wilding, MW and BE Paige, 1976, *Survey on Corrosion of Metals and Alloys in Solutions Containing Nitric Acid*, ICP-1107, Idaho National Engineering Laboratory, Idaho Falls, ID

Bibliography:

1. Bernhardsson, S, R Mellstrom, and J Oredsson, 1981, *Properties of Two Highly corrosion Resistant Duplex Stainless Steels*, Paper 124, presented at Corrosion 81, NACE International, Houston, TX 77218
2. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
3. Hammer, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
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7. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
8. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B

WTP Process Corrosion Data

PROCESS CORROSION DATA SHEET

Component(s) (Name/ID #) SBS condensate collection vessel (RLD-VSL-00005)Facility LAWIn Black Cell? No

Chemicals	Unit ¹	Contract Maximum		Non-Routine (Note 3)		Notes
		Leach	No leach	Leach	No Leach	
Aluminum	g/l	5.06E-02	5.11E-02	4.08E-02		
Chloride	g/l	1.22E+01	1.34E+01	1.17E-02		
Fluoride	g/l	2.80E+00	2.87E+00	7.04E-03		
Iron	g/l	2.82E-02	2.54E-02	1.37E-03		
Nitrate	g/l	2.35E+00	1.98E+00	1.58E-01		
Nitrite	g/l			3.13E-02		
Phosphate	g/l			2.41E-02		
Sulfate	g/l			1.20E-02		
Mercury	g/l	9.91E-01	3.44E-02	6.19E-04		
Carbonate	g/l			8.41E-02		
Undissolved solids	wt %	1.4%	1.3%			
Other (Pb)	g/l	6.10E-03	3.84E-04	3.02E-04		
Other	g/l					
pH	N/A					Note 4
Temperature	°F					Note 2

List of Organic Species:

References

System Description: 24590-LAW-3YD-30-00001, Rev 0

Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A

Normal Input Stream #: LOP05, LOP10

Off Normal Input Stream # (e.g., overflow from other vessels): Note 3

P&ID: 24590-LAW-M6-RLD-00001, Rev 2

PFD: 24590-LAW-M5-V17T-00014, Rev 4

Technical Reports: N/A

Notes:

- Concentrations less than 1×10^{-4} g/l do not need to be reported; list values to two significant digits max.
- T operation 59 °F (BOD) to 104 °F (24590-LAW-3YD-20-00001, Rev 0, p. C-4)
- Non-routine receives transfer from RLD-VSL-00003.
- pH 1 to 7.83 (CCN 083606)

Assumptions:

CORROSION EVALUATION

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

6.6.3 SBS Condensate Collection Vessel (RLD-VSL-00005)

Routine Operations

This vessel is designed for approximately a 2-day hold-up of the SBS column purge effluent. A transfer can be made daily to the PT facility during normal operations.

The SBS condensate collection vessel (RLD-VSL-00005) receives effluent from SBS column vessels (LOP-SCB-00001 and LOP-SCB-00002); SBS condensate vessels (LOP-VSL-00001 and LOP-VSL-00002); the C3/C5 drains/sump collection vessel (RLD-VSL-00004); vessel washings; and the plant wash vessel (RLD-VSL-00003).

The SBS condensate collection vessel (RLD-VSL-00005) is equipped with a mechanical agitator (RLD-AGT-00002) to maintain solids in suspension. The vessel is vented into a common vessel ventilation header.

The SBS condensate collection vessel discharge pumps are vertical in-vessel pumps (RLD-PMP-00003A/B) and can be routed to various locations through the pump bulge (RLD-BULGE-00004). Sampling capability is provided using a supply line from the pump recirculation line to an autosampler unit. The SBS condensate collection vessel discharge pumps (RLD-PMP-00003A/B) can pump the effluent daily to the PT LAW SBS condensate receipt vessels (TLP-VSL-00009A/B). In the event that the PT LAW SBS condensate receipt vessels (TLP-VSL-00009A/B) cannot receive the effluent, the effluent may be transferred to the LAW plant wash vessel (RLD-VSL-00003).

The SBS condensate collection vessel (RLD-VSL-00005) can be transferred to the PT facility through the LAW pump bulge (RLD-BULGE-00004) through two inter-facility lines. One of the lines is normally the transfer line from the LAW SBS condensate collection vessel (RLD-VSL-00005) to the PT facility LAW SBS condensate receipt vessels (TLP-VSL-00009A/B). The other line is normally the transfer line from the plant wash vessel (RLD-VSL-00003) to the PT facility plant wash vessel (PWD-VSL-00044).

Non-Routine Operations that Could Affect Corrosion/Erosion

The SBS condensate collection vessel (RLD-VSL-00005) overflows to the plant wash vessel (RLD-VSL-00003), which is located next to it in the same room.

The vessel can be washed down with internal spray nozzles (RLD-NOZ-00004, RLD-NOZ-00005). The chemistry can also be adjusted by introducing reagents into the vessel through the spray nozzles. Mechanical agitators on the SBS condensate collection vessel (RLD-VSL-00005) and pumps with recirculation capability are operated to suspend captured solids. Suspended solids are entrained into the effluent and are periodically removed from the vessels when the vessel contents are pumped to the specified vessel in the PT facility. If necessary, vessels can be flushed with water.

CORROSION EVALUATION

RLD-VSL-00003 (LAW)

Plant Wash Vessel

- Design Temperature (°F)(max/min): 200/-23
- Design Pressure (psig) (internal/external): 15/FV
- Location: incell

Offspring items

RLD-AGT-00001

ISSUED BY
RPP-WTP PDC

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on attached Process Corrosion Data Sheet

Operating Modes Considered:

- Normal operation

Materials Considered:

Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00	X	
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Material Required: UNS N08367/N08926

Top head: 316 (max 0.030% C; dual certified)

Note: Vessel upgraded to 6% Mo because it will be used as a back-up for RLD-VSL-00005.

Recommended Corrosion Allowance: 0.04 inch (includes 0.024 inch corrosion allowance and 0.004 inch erosion allowance)

Process & Operations Limitations:

- Develop rinsing/flushing procedure
- Develop lay-up strategy

Concurrence DMB
Operations

4	3/14/06	Modify operating description			NA	
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION**REVISION HISTORY**

3	5/25/05	Update wear allowance based on 24590-WTP-RPT-M-04-0008	DLAdler	JRDivine	NA	APRangus
2	6/30/04	Incorporate new PCDS Add Section p – Inadvertent Addition of Nitric Acid	DLAdler	JRDivine	NA	APRangus
1	11/18/03	Update design temp/pressure Specify mat'l for top head Append updated MSDS Editorial Changes Re-format references Add DWP note	DLAdler	JRDivine	NA	APRangus
0	4/22/02	Initial Issue	JRDivine	DLAdler	SS	BPosta
REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	MET	APPROVER

CORROSION EVALUATION

Corrosion Considerations:

RLD-VSL-00003 routinely receives effluent and overflow from the SBS condensate collection vessel, effluent from the C1/C2 and the C3/C5 drains/sump collection vessels and sump discharges. During off-normal events, RLD-VSL-00003 receives off-spec feed from the concentrate receipt vessels. While the normal operating temperature ranges from 59 to 68 °F, an overflow or transfer from RLD-VSL-00005 could take the temperature up to 104 °F. This condition is considered non-routine. Vessel is equipped with a mechanical agitator to keep solids in suspension.

a General Corrosion

In the proposed pH operating range, no specific information was found for the general/uniform corrosion of stainless steels or other material in the given waste. However, the austenitic and higher alloy steels typically have low corrosion rates, < 1 mpy, in the given environment even at the maximum temperature. This lack of data is not critical because the alloys needed for the system generally fail by pitting, crevice corrosion, or cracking.

Assuming the stated normal operating conditions are correct, 304L will be acceptable with a small uniform corrosion rate.

Conclusion:

Under normal operating conditions, 304L, 316L, or better will be acceptable.

b Pitting Corrosion

Normally the vessel is to operate between 59 and 69°F at a pH range of 1 to 8 with a minimum of halides. Berhardsson (1981) et al conclude 304L or 316L could be used based on temperatures and stated low-chloride conditions. However, at the stated non-routine concentrations of halides, a 6% Mo would be desirable.

If the vessel were filled with process water and left stagnant, there would be a tendency to pit. The time to initiate would depend on the source of the water, being shorter for filtered river water and longer for DIW. Pitting has been observed in both cases.

Conclusion:

Based on the stated normal operating conditions, 304L and 316L are acceptable.

c End Grain Corrosion

End grain corrosion only occurs in metal with exposed end grains and in highly oxidizing acid conditions.

Conclusion:

Not expected in this system.

d Stress Corrosion Cracking

The exact amount of chloride required to cause stress corrosion cracking is unknown. In part this is because the amount varies with temperature, metal sensitization, and the environment. But it is also unknown because chloride tends to concentrate under heat transfer conditions, by evaporation, and electrochemically during a corrosion process. Hence, even as little as 10 ppm can lead to cracking under some conditions. Generally, as seen in Sedriks (1996) and Davis (1987), stress corrosion cracking does not usually occur below about 140°F. With the proposed conditions, 304L will be acceptable.

Conclusion:

304L is expected to be satisfactory.

e Crevice Corrosion

Few solids are expected under normal conditions and crevice corrosion should be a minimum.

Conclusion:

Also see Pitting

f Corrosion at Welds

Corrosion at welds is not considered a problem in the proposed environment.

Conclusion:

Weld corrosion is not considered a problem for this system.

g Microbiologically Induced Corrosion (MIC)

The proposed operating conditions are suitable for microbial growth, but the system is downstream of the main entry points of microbes.

Conclusion:

MIC is not considered a problem.

CORROSION EVALUATION

h Fatigue/Corrosion Fatigue

Corrosion fatigue is not expected to be a problem if the piping and nozzles are properly supported.

Conclusions

Not expected to be a concern.

i Vapor Phase Corrosion

Vapor phase corrosion is not expected to be a concern.

Conclusion:

Not a concern.

j Erosion

Velocities are expected to be low. Erosion allowance of 0.004 inch for components with low solids content (≤ 2 wt%) at low velocities is based on 24590-WTP-RPT-M-04-0008. Because of the low pH, the agitator blade can be Ultimet but it is not considered necessary. Using the same material for the agitator as the vessel is satisfactory.

Conclusion:

Not expected to be a problem.

k Galling of Moving Surfaces

Not applicable.

Conclusion:

Not applicable.

l Fretting/Wear

No contacting surfaces expected.

Conclusion:

Not applicable.

m Galvanic Corrosion

No significantly dissimilar metals are present.

Conclusion:

Not applicable.

n Cavitation

None expected.

Conclusion:

Not believed to be of concern.

o Creep

The temperatures are too low to be a concern for metallic vessels.

Conclusion:

Not applicable.

p Inadvertent Nitric Acid Addition

At this time, the design does not provide for the presence of nitric acid reagent in this system. Additionally, the vessel sees low pH under normal operating conditions.

Conclusion:

Not applicable.

CORROSION EVALUATION

References:

1. 24590-WTP-RPT-M-04-0008, Rev. 2, *Evaluation Of Stainless Steel Wear Rates In WTP Waste Streams At Low Velocities*
2. 24590-WTP-RPT-PR-04-0001, Rev. B, *WTP Process Corrosion Data*
3. Berhardsson, S, R Mellstrom, and J Oredsson, 1981, *Properties of Two Highly Corrosion Resistant Duplex Stainless Steels*, Paper 124, presented at Corrosion 81, NACE International, Houston, TX 77218
4. Davis, JR (Ed), 1987, *Corrosion, Vol 13*, In "Metals Handbook", ASM International, Metals Park, OH 44073
5. Sedriks, AJ, 1996, *Corrosion of Stainless Steels*, John Wiley & Sons, Inc., New York, NY 10158

Bibliography:

1. Agarwal, DC, *Nickel and Nickel Alloys*, In: Revie, WW, 2000. *Uhlig's Corrosion Handbook*, 2nd Edition, Wiley-Interscience, New York, NY 10158
2. Davis, JR (Ed), 1994, *Stainless Steels*, In ASM Metals Handbook, ASM International, Metals Park, OH 44073
3. Hamner, NE, 1981, *Corrosion Data Survey*, Metals Section, 5th Ed, NACE International, Houston, TX 77218
4. Jones, RH (Ed.), 1992, *Stress-Corrosion Cracking*, ASM International, Metals Park, OH 44073
5. Koch, GH, 1995, *Localized Corrosion in Halides Other Than Chlorides*, MTI Pub No. 41, Materials Technology Institute of the Chemical Process Industries, Inc, St Louis, MO 63141
6. Phull, BS, WL Mathay, & RW Ross, 2000, *Corrosion Resistance of Duplex and 4-6% Mo-Containing Stainless Steels in FGD Scrubber Absorber Slurry Environments*, Presented at Corrosion 2000, Orlando, FL, March 26-31, 2000, NACE International, Houston TX 77218.
7. Uhlig, HH, 1948, *Corrosion Handbook*, John Wiley & Sons, New York, NY 10158
8. Van Delinder, LS (Ed), 1984, *Corrosion Basics*, NACE International, Houston, TX 77084
9. Wilding, MW and BE Paige, 1976, *Survey on Corrosion of Metals and Alloys in Solutions Containing Nitric Acid*, ICP-1107, Idaho National Engineering Laboratory, Idaho Falls, ID

24590-WTP-RPT-PR-04-0001, Rev. B
WTP Process Corrosion Data

Component(s) (Name/ID #)	Plant wash vessel (RLD-VSL-00003)
---------------------------------	-----------------------------------

Facility LAW

In Black Cell? No

List of Organic Species:

System Description: 24590-LAW-3YD-30-00001, Rev 0

Mass Balance Document: 24590-WTP-M4C-V11T-00005, Rev A

Normal Input Stream # RLD25

Off Normal Input Stream # (e.g., overflow from other vessels): N/A

P&ID: 24590-LAW-M6-RLD-00001. Rev 2

PFD: 24590-LAW-M5-V17T-00014, Rev 4

Technical Reports: N/A

Notes:

1. Concentrations less than 1×10^{-4} g/l do not need to be reported; list values to two significant digits max.
 2. T operation 59 °F (BOD) to 68 °F (2450-LAW-3YD-20-00001, Rev 0, p. C-2)
 3. Non routine: T operation 59 °F to 104 °F is overflow or transfer from RI D-VSL-00005
 4. pH 1 to 8 (CCN 083607)

Assumptions:

CORROSION EVALUATION

Plant Wash Vessel (RLD-VSL-00003)

Routine Operations

The plant wash vessel is normally empty, but effluent sources for the plant wash vessel (RLD-VSL-00003) include:

- Vessel washes
- Off-specification batches and washdown from the concentrate receipt vessels, melter feed prep vessels and melter feed vessels
- Effluent from the SBS condensate collection vessel (RLD-VSL-00005) under off-normal operations
- Effluents from the C1/C2 drain/sump collection vessel (NLD-VSL-00005)
- Effluent from the C3/C5 drain/sump collection vessel (RLD-VSL-00004)
- The overflow from the SBS condensate collection vessel (RLD-VSL-00005)
- Sump discharges from the process cells and the liquid effluent cells

This vessel is designed to handle the largest volume from any vessel/equipment wash or drain in the LAW vitrification facility. The largest volume is from the SBS condensate collection vessel (RLD-VSL-00005). If both the plant wash vessel (RLD-VSL-00003) and the SBS condensate collection vessel (RLD-VSL-00005) are full and sample results have not been determined, or if the PT facility cannot receive the contents, then transfer will not be initiated. The plant wash vessel (RLD-VSL-00003) and the SBS condensate collection vessel (RLD-VSL-00005) are located in the same room.

The vessel is equipped with a mechanical agitator to maintain solids in suspension.

The plant wash pumps (RLD-PMP-00001A/B) are in-vessel vertical pumps and can be routed to various locations via the RLD pump bulge (RLD-BULGE-00004). Sampling capability is provided using a sampling leg off the pump recirculation line to an autosampler unit. The collected effluent, including plant wash vessel (RLD-VSL-00003) vessel washings, will be periodically pumped to the PT facility plant wash vessel (PWD-VSL-00044).

Non-Routine Operations that Could Affect Corrosion/Erosion

- The vessel can also be washed via internal spray nozzles.
- Receives overflows from RLD-VSL-00005.
- Though not a routine operation, if the need arises, the plant wash vessel (RLD-VSL-00003) contents can be transferred to the SBS condensate collection vessel (RLD-VSL-00005), and vice versa.
- Though not expected to be a routine operation, reagents can be introduced into the vessel through the spray nozzles for chemical adjustment of the vessel contents.

Mechanical agitators on the plant wash vessel (RLD-VSL-00003) and pumps with recirculation capability are operated to suspend captured solids. Suspended solids are entrained into the effluent and are periodically removed from the vessels when the vessel contents are pumped to the specified vessel in the PT facility. If necessary, vessels can be flushed with water.

Quarter Ending June 30, 2010


24590-PTF-PCN-ENV-08-028

Hanford Facility RCRA Permit Modification Notification Form**Part III, Operating Unit 10****Waste Treatment and Immobilization Plant**

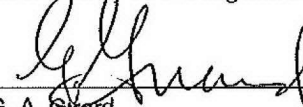
Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update Piping and Instrumentation Diagrams (P&ID) for the PTF Vessel Vent Process System (PVP) Caustic Scrubber (PVP-SCB-00002) and associated Bulge in Appendix 8.2 of the Dangerous Waste Permit, and P&IDs for the PTF Cesium Nitric Acid Recovery Process System Evaporator Vessel (CNP-EVAP-00001) in Appendix 8.2 of the Dangerous Waste Permit.

Submitted by Co-Operator:


D. M. Busche4/21/10
Date

Reviewed by ORP Program Office:


G. A. Girard4/21/10
Date

Quarter Ending June 30, 2010

24590-PTF-PCN-ENV-08-028

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Waste Treatment and Immobilization Plant

Permit Part:

Part III, Operating Unit 10Description of Modification:

The purpose of this Class 1 modification is to update the P&IDs for the PTF Vessel Vent Process System Caustic Scrubber and associated Bulge, and PTF Cesium Nitric Acid Recovery Process System Evaporator Vessel in Appendix 8.2 of the Dangerous Waste Permit. The permit P&IDs incorporated into the DWP are being replaced with source P&IDs as indicated in the Table below. The increase in the number of PVP drawings submitted results from converting the source drawing into three to provide a more clear representation of the system, including additional details for instrumentation and control logic.

Appendix 8.2			
Replace:	24590-PTF-M6-PVP-P0017, Rev 0	With:	24590-PTF-M6-PVP-00017001, Rev 0
			24590-PTF-M6-PVP-00017002, Rev 0
			24590-PTF-M6-PVP-00017003, Rev 0
	24590-PTF-M6-CNP-P0008, Rev 1		24590-PTF-M6-CNP-00008, Rev 2

This modification requests Ecology approval and incorporation into the permit, the changes provided in applicable document change forms (e.g., DCNs) and changes associated with the resolution to comments on change documents since the issuance of the last revision of the permitted drawing. Revisions are the result of ongoing design changes.

The following identifies the significant changes to the drawings:

- Modified, deleted, and added notes, holds, and references
- Modified, identified, and added support/utility system lines, valves, in-line components, instruments and control logic
- Incorporated changes from DCNs identified in the following notes:
 - Note 9 (24590-PTF-M6-PVP-00017001 & -00017003)
 - Note 8 (24590-PTF-M6-PVP-00017002)
 - Note 29 (24590-PTF-M6-CNP-00008)

The following outstanding change documents apply to 24590-PTF-M6-PVP-00017001 and have not been incorporated into this modification:

- 24590-PTF-M6LN-PVP-00003
- 24590-PTF-M6N-PVP-00061
- 24590-PTF-M6N-PVP-00062

The following outstanding change documents apply to 24590-PTF-M6-PVP-00017003 and have not been incorporated into this modification:

- 24590-PTF-M6LN-PVP-00002
- 24590-PTF-M6LN-PVP-00005
- 24590-PTF-M6N-PVP-00061

Quarter Ending June 30, 2010

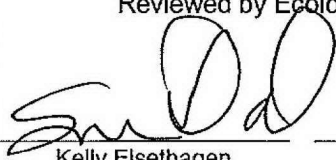
24590-PTF-PCN-ENV-08-028

The following outstanding change documents apply to 24590-PTF-M6-CNP-00008 and have not been incorporated into this modification:

- 24590-PTF-M6LN-CNP-00002
- 24590-PTF-M6LN-CNP-00003
- 24590-PTF-M6LN-CNP-00013
- 24590-PTF-M6N-CNP-00082
- 24590-PTF-M6N-CNP-00084
- 24590-PTF-M6N-CNP-00095
- 24590-PTF-M6N-CNP-00097
- 24590-PTF-M6N-M80T-00080
- 24590-PTF-MPPN-CNP-00001

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number:
 Enter wording of WAC 173-303-830, Appendix I Modification citation:
 In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved/Concur: <input checked="checked" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) Reason for denial:	Reviewed by Ecology:  Kelly Elsethagen Date: 7/7/10
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10-ESQ-124

Drawings:

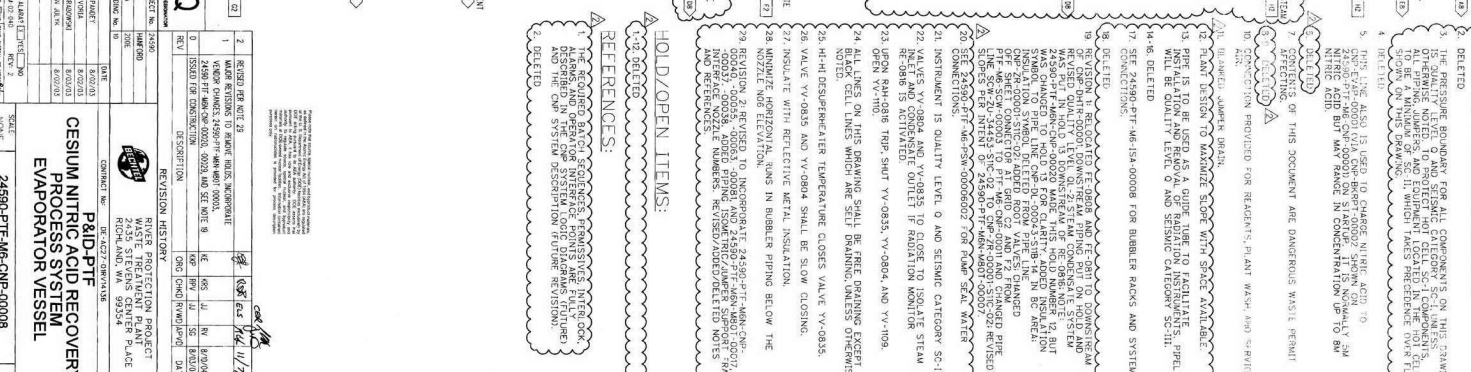
24590-PTF-M6-PVP-00017001 Rev 0

24590-PTF-M6-PVP-00017002 Rev 0

24590-PTF-M6-PVP-00017003 Rev 0

24590-PTF-M6-CNP-00008 Rev 2

SYMBOLS



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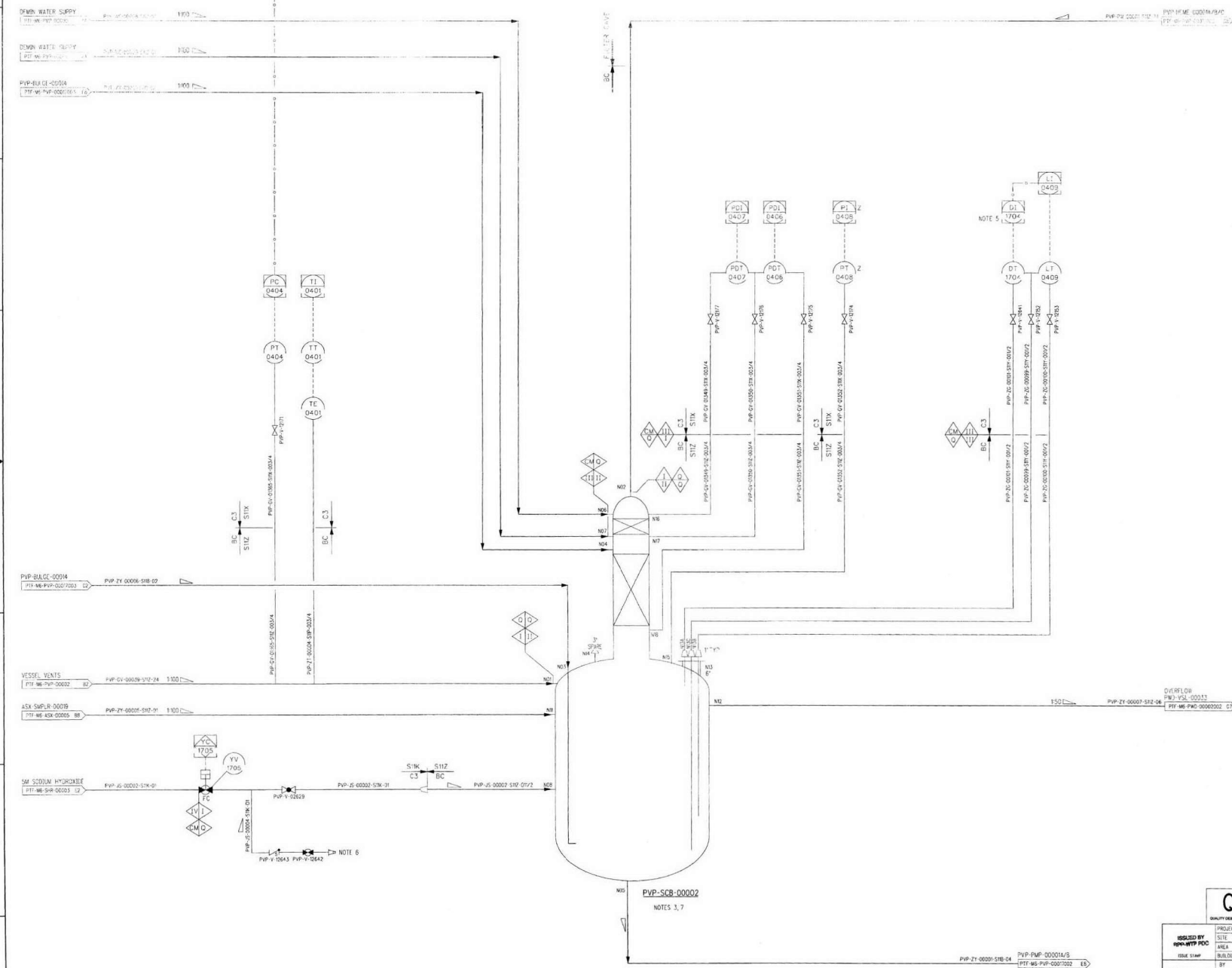
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NOTES:

- SEE DRAWINGS 24590-WTP-M6-SO-00001 THROUGH 24590-WTP-M6-SO-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND, AND GENERAL SLOPE REQUIREMENTS.
- CONTENTS OF THIS DOCUMENT ARE DANGEROUS WASTE PERMIT AFFECTING.
- THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-II, UNLESS OTHERWISE NOTED. SCRUBBER IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-II.
- ALL LINES SHOWN ON THIS DRAWING SHALL BE FREE DRAINING, EXCEPT BLACK CELL LINES WHICH ARE SELF-DRAINING, UNLESS OTHERWISE NOTED.
- SEE DRAWING 24590-PTF-M6-ISA-00001 FOR BURGER 3000 AND SYSTEM CONNECTIONS.
- CONNECTION PROVIDED FOR REAGENTS, PLANT AIR, AND SERVICE AIR.
- VALVES VV-0474 (SHEET 2) AND VV-0475 (SHEET 2) SHALL BE VESSEL LEVEL SET LIMITS.
- OVERFLOW LINE SHALL BE DIPPED INTO VESSEL (PVP-SCB-00002).
- THIS DRAWING IS CONVERTED FROM A SINGLE SHEET DRAWING TO MULTISHEET DRAWING AND IN PART SUPERSEDES 24590-PTF-M6-PVP-00017. SEE 24590-WTP-M6-SO-00001 FOR INFORMATION FROM 24590-PTF-M6-PVP-00017. SEE 24590-WTP-M6-SO-00002, 24590-PTF-M6-PVP-00003, AND 24590-PTF-M6-PVP-00004 FOR INFORMATION.

HOLD/OPEN ITEMS:

NONE

REFERENCES:

- THE REQUIRED OPERATIONAL SEQUENCES, PERMISSIVES, INTERLOCKS, ALARMS AND OPERATOR INTERFACE POINTS ARE FULLY DESCRIBED IN THE PVP SYSTEM LOGIC DIAGRAMS (FUTURE) AND THE PVP SYSTEM DESCRIPTION (FUTURE REVISION).

DWG NO.	TITLE
24590-PTF-M6-PVP-00017001	VESEL VENT PROCESS SYSTEM PVP-SCB-00002
24590-PTF-M6-PVP-00017002	VESEL VENT PROCESS SYSTEM PVP-BULGE-00001
24590-PTF-M6-PVP-00017003	VESEL VENT PROCESS SYSTEM PVP-BULGE-00004

Q	REVISION	DESCRIPTION	DATE
1	ISSUED FOR CONSTRUCTION	SEE NOTE 9	04/14/08

PROJECT NO.	24590
SITE	HANFORD
AREA	2000
ISSUE DATE	04/14/08
ORIGINATOR	DE-AC27-DIRV4136
DESIGNER	DE-AC27-DIRV4136
APPROVER	DE-AC27-DIRV4136
REVIEWER	DE-AC27-DIRV4136

CONTRACT NO.	DE-AC27-DIRV4136
PROJECT NAME	P&ID - PTF PRETREATMENT VESSEL VENT PROCESS SYSTEM CAUSTIC SCRUBBER PVP-SCB-00002
SCALE	AS SHOWN
DATE	04/14/08
REVISION	0

DATE	04/14/08
TIME	04:14
DATE	04/14/08
TIME	04:14

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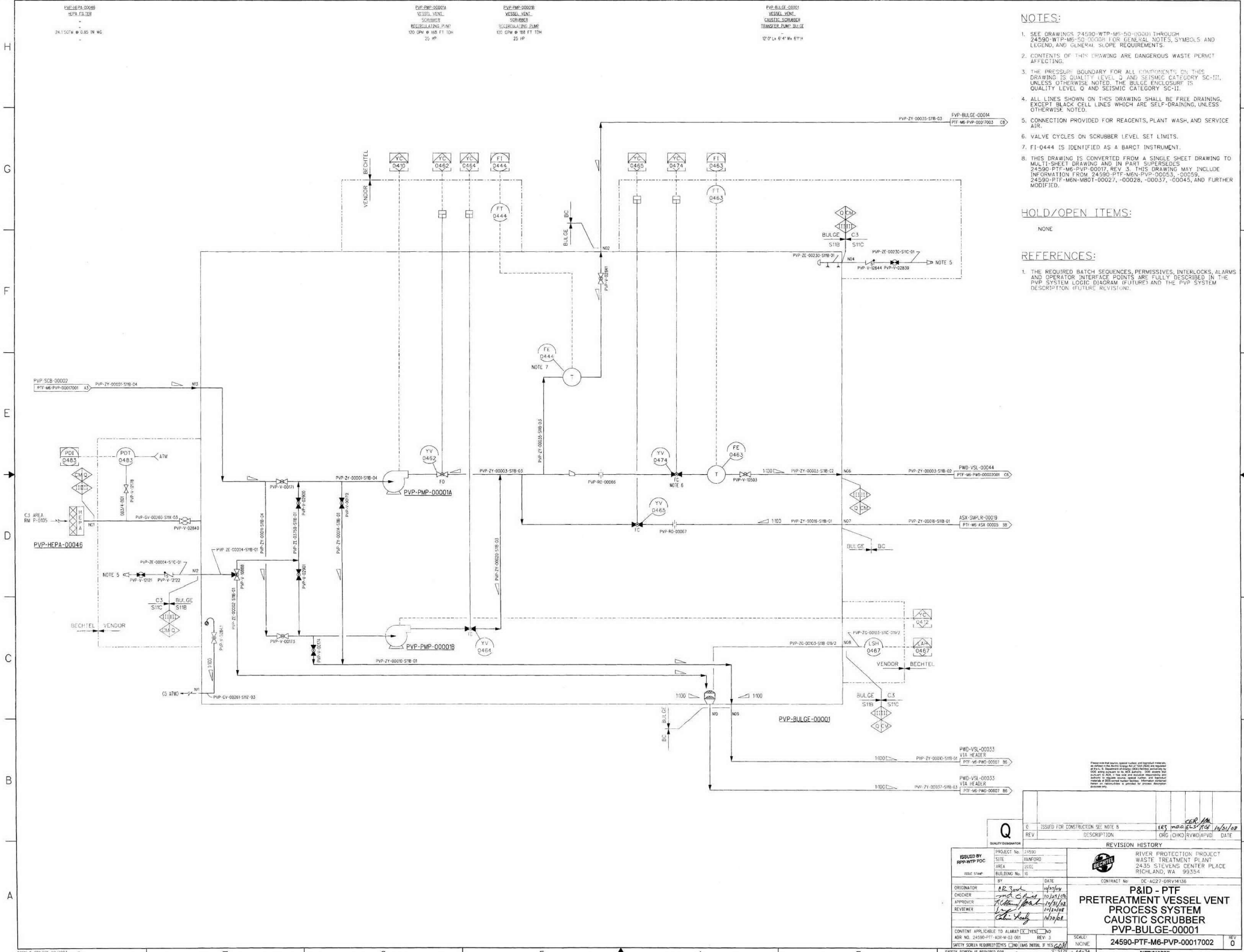
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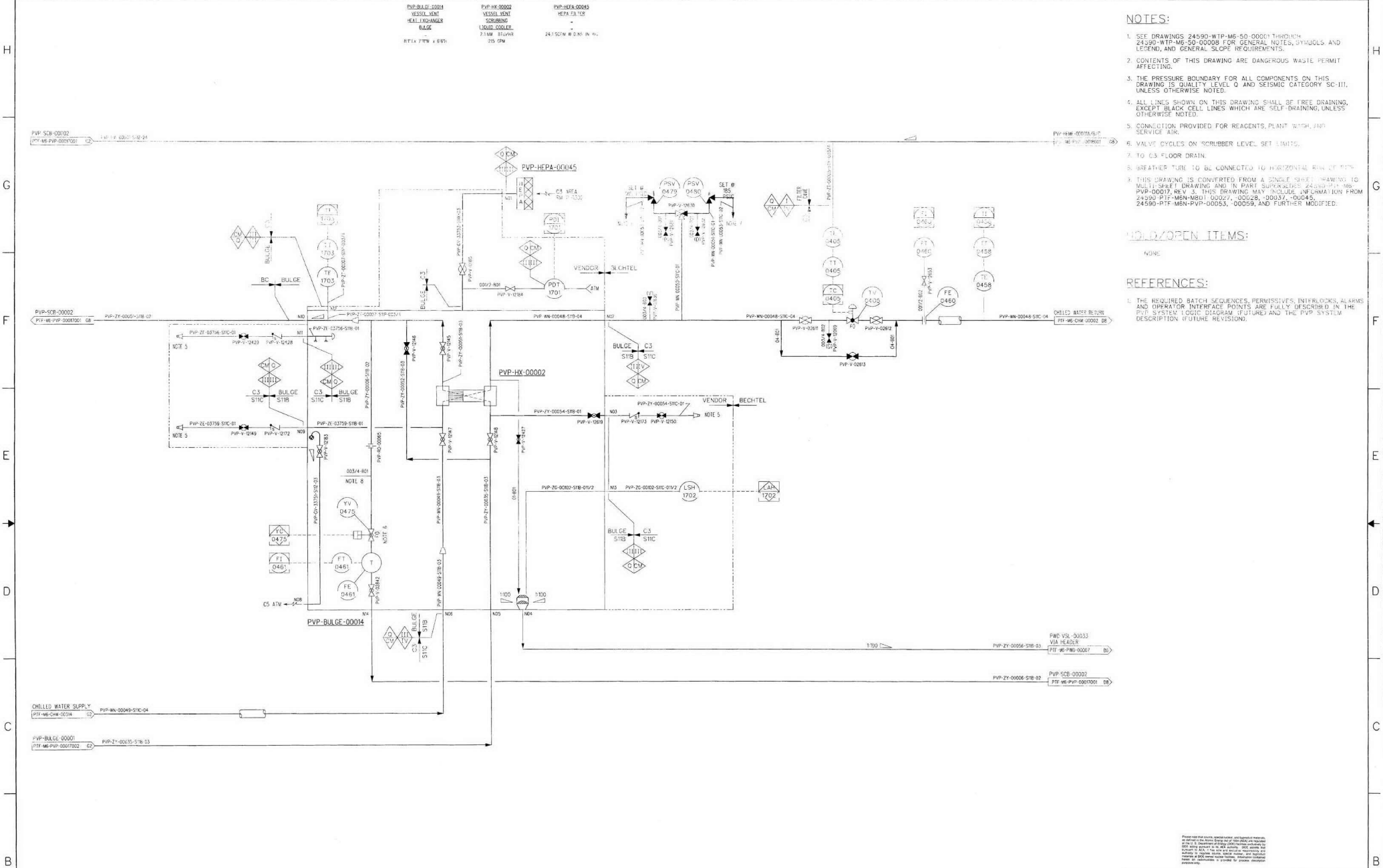
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- NOTES:
- SEE DRAWINGS 24590-WTP-M6-50-00001 THROUGH 24590-WTP-M6-50-00008 FOR GENERAL NOTES, SYMBOLS AND LEGEND, AND GENERAL SLOPE REQUIREMENTS.
 - CONTENTS OF THIS DRAWING ARE DANGEROUS WASTE PERMIT AFFECTING.
 - THE PRESSURE BOUNDARY FOR ALL COMPONENTS ON THIS DRAWING IS QUALITY LEVEL Q AND SEISMIC CATEGORY SC-III, UNLESS OTHERWISE NOTED.
 - ALL LINES SHOWN ON THIS DRAWING SHALL BE FREE DRAINING, EXCEPT BLACK CELL LINES WHICH ARE SELF-DRAINING, UNLESS OTHERWISE NOTED.
 - CONNECTION PROVIDED FOR REAGENTS, PLANT WASH, AND SERVICE AIR.
 - VALVE CYCLES ON SCRUBBER LEVEL SET LIMITS.
 - TO C3 FLOOR DRAIN.
 - GREATER TUNE TO BE CONNECTED TO HORIZONTAL RUN OF PIPE.
 - THIS DRAWING IS CONVERTED FROM A SINGLE SHEET DRAWING TO MULTI-SHEET DRAWING AND IN PART SUPERSEDES 24590-P1-M6-PVP-00017, REV 3. THIS DRAWING MAY INCLUDE INFORMATION FROM 24590-PTF-M6N-PVP-00051, 00052, 00053, 00054, 00055, 24590-PTF-M6N-PVP-00053, 00059, AND FURTHER MODIFIED.

UNCLOSED ITEMS:

NONE

REFERENCES:

1. THE REQUIRED BATCH SEQUENCES, PERMISSIVES, INTERLOCKS, ALARMS AND OPERATOR INTERFACE POINTS ARE FULLY DESCRIBED IN THE PFD SYSTEM LOGIC DIAGRAM (FUTURE) AND THE PVP SYSTEM DESCRIPTION (FUTURE REVISION).

ISSUED BY RPM-WTP-PDC		PROJECT No. 24590		RIVER PROTECTION PROJECT	
SITE HARFORD		DATE 09/15/08		WASTE TREATMENT PLANT	
ISSUE No. 01		CONTRACT No. DE-AC27-08WV4136		2455 STEVENS CENTER PLACE	
BY J. J. Smith		DATE 09/15/08		RICHMOND, WA 99354	
CHECKER J. J. Smith		DATE 09/15/08		P&ID - PTF	
APPROVER J. J. Smith		DATE 09/15/08		PRETREATMENT VESSEL VENT	
REVIEWER J. J. Smith		DATE 09/15/08		PROCESS SYSTEM	
CONTENT APPLICABLE TO ALARMS <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		SCALE NONE		CAUSTIC SCRUBBER TO	
SAFETY SYMBOLS IDENTIFIED IN 24590-WTP-PVP-00017003		REV. 3		PVP-BULGE-00014	
24590-PTF-M6-PVP-00017003		09/15/08		0	

Quarter Ending 09/30/10

24590-PTF-PCN-ENV-10-026

Hanford Facility RCRA Permit Modification Notification Form**Part III, Operating Unit 10****Waste Treatment and Immobilization Plant**

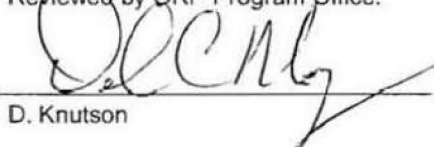
Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update Piping and Instrumentation Diagram (P&ID) for Treated LAW Evaporation Utility Rack, PSA-RK-00002

Submitted by Co-Operator:


D. M. Busche7/29/10
Date

Reviewed by ORP Program Office:


D. Knutson8/20/10
Date

Quarter Ending 09/30/10

24590-PTF-PCN-ENV-10-026

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Permit Part:

Waste Treatment and Immobilization Plant**Part III, Operating Unit 10**Description of Modification:

The purpose of this Class 1 modification is to update the P&ID for the Treated LAW Evaporation Utility Rack, PSA-RK-00002 in Appendix 8.2 of the Dangerous Waste Permit (DWP). The permit P&ID incorporated into the DWP is being replaced with the current revision as indicated in the Table below:

Appendix 8.2

Replace:	24590-PTF-M6-TLP-P0006, Rev 0	With:	24590-PTF-M6-TLP-00006, Rev 2
----------	-------------------------------	-------	-------------------------------

This modification requests Ecology approval and incorporation into the permit, the changes provided in applicable document change forms (e.g., DCNs) and changes associated with the resolution to comments on change documents since the issuance of the last revision of the permitted drawing. Revisions are the result of ongoing design changes.

The following identifies the significant changes to the drawing:

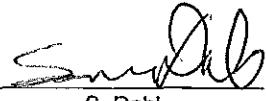
- Incorporated 24590-PTF-M6N-M80T-00005, -00015, and -00037
- Incorporated 24590-PTF-M6N-M80T-00008, -00012, and -00036
- Incorporated 24590-PTF-M6N-TLP-00038
- Added quick connect and check valve
- Revised quality / seismic classification
- Deleted demineralized water isolation valves
- Revised Y-strainer downstream of fluidics controller to conical pilgrim hat strainer
- Revised, deleted, and added notes, holds, and references

The following outstanding change documents apply to 24590-PTF-M6-TLP-00006 and have not been incorporated into this modification:

- 24590-PTF-M6LN-M80T-00033
- 24590-PTF-M6LN-TLP-00005
- 24590-PTF-M6N-10-00004
- 24590-PTF-M6N-10-00007
- 24590-PTF-M6N-M80T-00055
- 24590-PTF-M6N-M80T-00080
- 24590-PTF-M6PR-10-00002

Quarter Ending 09/30/10

24590-PTF-PCN-ENV-10-026

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		
Enter relevant WAC 173-303-830, Appendix I Modification citation number: Enter wording of WAC 173-303-830, Appendix I Modification citation: In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹ 1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."				
Modification Approved/Concur: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> Denied (state reason below) <u>Reason for denial:</u>	Reviewed by Ecology:  S. Dahl			
	Date 9/22/10			

[illegible]

5. SUBJECT LEVEL DESIGNATION AND DEFINITE CATEGORIES
CLASSIFICATION ON BASIS PENDING APPROVAL OF AUTHORIZING
BASIC AGREEMENT REQUIRED. (5010-10-10-0000-0000-0000)

1. THE REQUIRED OPERATIONAL SEQUENCE, TERMINALS, INTERLOCAL ARMS, AND OPERATOR INTERIOR POINTS ARE FIRST DESCRIBED IN THE AIR SYSTEM (AS) DIAGRAMS (FIGURES 2 AND 3). THE SYSTEM COMPLETION AND ABORT SEQUENCES ARE

[illegible]

Quarter Ending 09/30/2010

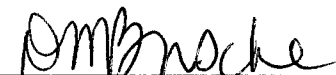
24590-WTP-PCN-ENV-08-001

Hanford Facility RCRA Permit Modification Notification Form**Part III, Operating Unit 10****Waste Treatment and Immobilization Plant**

Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Replace permit document "Tank System and Miscellaneous Unit System Piping Weld Nondestructive Examination Requirements," 24590-WTP-PER-M-06-001 in Appendix 7.12 of the Dangerous Waste Permit.

Submitted by Co-Operator:



D. M. Busche

7/7/10

Date

Reviewed by ORP Program Office:



D. Knutson

7/28/10

Date

Quarter Ending 09/30/2010

24590-WTP-PCN-ENV-08-001

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Waste Treatment and Immobilization Plant

Permit Part:

Part III, Operating Unit 10**Description of Modification:**

The purpose of this Class 1 prime modification is to replace the Tank System and Miscellaneous Unit System Piping Weld Nondestructive Examination Requirements permit document. The following Engineering Specifications are submitted to replace the document currently in Appendix 7.12.

Appendix 7.12			
Replace:	24590-WTP-PER-M-06-001, Rev. 0	With:	24590-WTP-3PS-PS02-T0001, Rev 10
			24590-WTP-3PS-PS02-T0003, Rev 8

This modification requests State of Washington Department of Ecology approval to replace the Tank system and Miscellaneous Unit system Piping Weld Nondestructive Examination Requirements (NDE) permit document with the Engineering Specification for Shop Fabrication of Piping and the Engineering Specification for Field Fabrication and Installation of Piping.

This permit change notice describes changes/clarifications to piping weld NDE, and related requirements, made in the engineering specifications since issuance of the permit document. The NDE requirements are summarized in table format in Appendix A of the current permit document, Appendix A of the Engineering Specification for Shop Fabrication of Piping, and Appendix B of the Engineering Specification for Field Fabrication and Installation of Piping. There is not a one-for-one correlation between the NDE requirements in the permit document and the engineering specifications because the permit document combined and summarized NDE requirements for both shop and field fabrication of piping welds into a single document. The NDE requirements for piping welds are in accordance with ASME B31.3, 1996, Process Piping.

The following summarizes the significant changes:

- Specification 24590-WTP-3PS-PS02-T0001, Rev 10, added/clarified requirements for both shop welding and NDE of shop welds, including:
 - Definitions, locations, and weld boundaries for black cell and hard to reach areas
 - NDE requirements for black cell and hard to reach areas
 - Requirements for welding and cleaning of titanium piping
 - Requirements for vacuum box leak testing
 - Requirement for manufacturer to perform 100% radiography of all ASTM A312 seam welded pipe to be installed in black cells and hard to reach areas
 - Requirements for minimum wall thickness measurement
 - Liquid penetrant acceptance requirements
 - NDE requirements for integrally reinforced fitting branch connection welds
 - Marking requirements
- Specification 24590-WTP-3PS-PS02-T0003, Rev 8, added/clarified requirements for field welding and NDE of field welds, including:
 - Definitions, locations, and weld boundaries for black cell and hard to reach areas
 - NDE requirements for black cell and hard to reach areas
 - RT acceptance criteria for jacket piping welds
 - Requirements for installation of embedded pipe
 - Requirement for shop welds not to rest on steel members
 - Requirements for orientation of seam welds for high pressure steam isometrics
 - NCR dispositions for hydrostatic testing of transfer lines
 - Requirements for welding and cleaning of titanium piping

Quarter Ending 09/30/2010

24590-WTP-PCN-ENV-08-001

- Requirements for vacuum box leak testing
- Requirements for non-load bearing, non-pressure retaining pipe attachments, and related welding NDE
- Requirements for treating water to avoid microbial induced corrosion
- Requirements for base metal repair
- Requirement for manufacturer to perform 100% radiography of all ASTM A312 seam welded pipe to be installed in black cells and hard to reach areas
- Requirements for minimum wall thickness measurement
- Liquid penetrant acceptance requirements
- NDE requirements for integrally reinforced fitting branch connection welds
- Marking requirements

The following is a list of outstanding change documents that have not been incorporated into this modification:

- 24590-WTP-3PS-PS02-T0001, Rev 10
 - 24590-WTP-3PN-PS02-00088
 - 24590-WTP-3PN-PS02-00090
 - 24590-WTP-3PS-PS02-T0001
 - 24590-WTP-SDDR-MS-09-00068
 - 24590-WTP-SDDR-MS-09-00101
 - 24590-WTP-SDDR-MS-10-00004
 - 24590-WTP-SDDR-MS-10-00075
 - 24590-WTP-SDDR-MS-10-00076
 - 24590-WTP-SDDR-MS-10-00016
- 24590-WTP-3PS-PS02-T0003, Rev 8
 - 24590-WTP-3PN-PS02-00091
 - 24590-WTP-FC-P-09-0449
 - 24590-WTP-FC-P-09-0458
 - 24590-WTP-FC-P-10-0110

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		


Enter relevant WAC 173-303-830, Appendix I Modification citation number:

Enter wording of WAC 173-303-830, Appendix I Modification citation:

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification
Approved/Concur: ☒ Yes ☐ Denied (state reason below)
Reason for denial:

Reviewed by Ecology:


S. Dahl

9/20/10
Date



R11099707



RIVER PROTECTION PROJECT – WASTE TREATMENT PLANT

ENGINEERING SPECIFICATION

FOR

Shop Fabrication of Piping

ISSUED BY
RPP-WTP PDCContent applicable to ALARA? ☒ Yes ☐ NoADR No.
24590-WTP-ADR-PL-09-0001Rev
0

Quality Level

Q

DOE Contract No.
DE-AC27-01RV14136

NOTE: Contents of this document are Dangerous Waste Permit affecting.

0	6/3/02	B. Gavino	J. Weetch	M. Myatt		G. Warner	S. Foelber
1	6/24/02	B. Gavino	J. Weetch	M. Myatt		G. Warner	S. Foelber
2	5/14/03	B. Gavino	J. Weetch	D. Lytle		G. Warner	M. Myatt
3	8/18/03	B. Gavino	J. Weetch	D. Lytle		G. Warner	M. Myatt
4	4/22/04	B. Gavino	J. Sutton	K. Oldfather		G. Warner	S. Skiles/ MM
5	12/27/04	B. Gavino	J. Sutton	K. Oldfather		G. Warner	M. Myatt
6	8/22/05	K. Kramer	D. Lytle	K. Oldfather	D. Lord	G. Warner	J. Minichiello
7	9/5/06	D. Lytle	J. Sutton	K. Oldfather	K. D. Gibson	S. Akerman	J. Minichello
8	2/12/08	B. La Pointe	J. Sutton	J. Schuette	R. Carlstrom	M. Ehlinger/SV	C. Winkler/DJ
9	4/9/09	C. Nichols	A. Tiongson	D. Jackson	R. Carlstrom	N/A	M. Gober
10	8-25-09	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	N/A	<i>[Signature]</i> for Mark Gober
REV	DATE	BY	CHECK	REVIEW	E&NS	QA	DP&M

SPECIFICATION No.
24590-WTP-3PS-PS02-T0001Rev
10

Revision History

Revision	Reason for Revision
10	<p>Incorporated the following by revision:</p> <ol style="list-style-type: none"> Sections 3.2.2.3.6, 3.2.2.3.7, and 3.2.2.3.8 and Appendix A - incorporated BODCN 24590-WTP-BODCN-ENG-09-0007 (as accepted by DOE - reference CCN 193394 & 198448) - clarification of NDE requirements. Section 1.9.3.2 - incorporated SCN-24590-WTP-3PN-PS02-00086. Minor editorial change to clarify intent. Section 1.10.32 - Incorporated the following by reference: SDDR 24590-WTP-SDDR-PL-09-00008 SDDR 24590-WTP-SDDR-PL-09-00017 SDDR 24590-WTP-SDDR-MS-08-00084 SDDR 24590-WTP-SDDR-MS-09-00067. Section 3.1.1.8 - incorporated PIER 24590-WTP-PIER-MGT-09-0959-D seam weld orientation requirements for DB (high pressure steam) isometrics. Other minor editorial corrections as marked.
9	<p>Incorporated, as revised: 24590-WTP-3PN-PS02-00074, 24590-WTP-3PN-PS02-00076, 24590-WTP-3PN-PS02-00078, 24590-WTP-3PN-PS02-00081, and 24590-WTP-SDDR-PROC-02-0211.</p> <p>Sections 1, & 2 - incorporated black cell and hard-to-reach information and related requirements listed in BOD 24590-WTP-DB-ENG-01-001, Rev. 1M, Section 16 (BODCN 24590-WTP-BODCN-ENG-08-0008 (CCN 184737) including the DOE acceptance comments listed in letter 08-WTP-168 dated 9/25/08 (CCN 186823)).</p> <p>Section 2 - 2.1.8.2 - updated marking requirements to include use of vibro-etch tool.</p> <p>Section 3.1.1 - added requirements for titanium fabrication.</p> <p>Section 3.1.1.2 - updated marking requirements to include use of vibro-etch tool.</p> <p>Section 3.2 & Appendix A - updated Table of NDE requirements reflect BOD 24590-WTP-DB-ENG-01-001, Rev. 1M, Section 16 (BODCN 24590-WTP-BODCN-ENG-08-0008 (CCN 184737) including the DOE acceptance comments listed in letter 08-WTP-168 dated 9/25/08 (CCN 186823)). Also, listed NDE requirements in Section 3.2.2 of the specification.</p> <p>Added Pipe Class S11A spool fabrication & NDE requirements to Sections 1.2.1.3.3, 3.1.1.1, & 3.2.1.2 required for close out Action # CRPT-2008-336-2 of 24590-WTP-CRPT-QA-08-336, Rev. 0. Added statement to Section 1.2.1.3 that the design code for Pipe Class S11A is the Uniform Plumbing Code and the fabrication code is ASME B31.3-1996.</p> <p>Various other minor and editorial changes.</p>
8	<p>Incorporated, as revised, 24590-WTP-3PN-PS02-00071, 24590-WTP-3PN-PS02-00073, and 24590-WTP-FC-P-07-0157,</p> <p>Performed a general revision of the entire document; hence, revisions are not denoted by revision bars.</p> <p>Incorporated the applicable requirements of CCN 169881 which also deletes notes 4 and 8 to Appendix A.</p>
7	<p>Incorporated the following by revision:</p> <p>24590-WTP-3PN-PS02-00056, -00060, -00064, -00066, -00068 (modified within as required)</p> <p>Incorporate by reference 24590-WTP-SDDR-M-05-00024, -PL-05-00060, -PL-05-00063, -PL-06-00001, -PL-06-00005, -PL-06-00008 and -PROC-05-00759</p> <p>Revised cover page Quality Designator from 'QL' to 'Q'</p> <p>Revised Sections 1.4.1.1, 1.4.1.2, 1.4.1.3</p> <p>Deleted Section 3.1.1.5</p>
6	<p>Incorporated the following by revision:</p> <p>24590-WTP-3PN-PS02-00043, -00044, -00047-00049-00050-00052</p> <p>Incorporate by Design 24590-WTP-SDDR-PROC-04-01304, -PROC-05-00195</p> <p>Incorporate by reference 24590-WTP-SDDR-PROC-05-00058</p>
5	<p>Incorporated the following by revision:</p>

Revision	Reason for Revision
	<p>24590-WTP-3PN-PS02-00022, -00026, -00029, -00030, -00032, -00034, & -00037</p> <p>24590-WTP-SDDR-PROC-04-00604</p> <p>Incorporated the following by reference:</p> <p>24590-WTP-CDR-CON-04-0094, -0103</p> <p>24590-WTP-NCR-CON-04-0254</p> <p>24590-WTP-SDDR-PROC-04-00453, -00834, -00859, -00950, -00951, -00952, -00979, -00996, -01006, & -01007</p>
4	<p>Revised para. 1.2.1.14 to define PMI requirement per the PMI specification, not per the piping material class</p> <p>Incorporated SCNs 24590-WTP-3PN-PS02-00011, -00012, -00017, and -00018 (<u>Note</u>: 24590-WTP-3PN-PS02-00017 incorporated SDDRs 24590-WTP-SDDR-PROC-03-0391 and -0410)</p> <p>Incorporated 24590-WTP-CDR-CON-03-058 by reference</p> <p>Revised 3.1.1.4.2 to define required distance between an integral attachment to the pipe and pipe weld</p>
3	<p>Incorporated FCR-24590-WTP-FCR-P-03-041, SCN 24590-WTP-3PN-PS02-00008, SDDR 24590-WTP-SDDR-PROC-0103, SDDR 24590-WTP-SDDR-PROC-03-0104, SDDR 24590-WTP-SDDR-PROC-03-0105. Incorporated by reference SDDR 24590-SDDR-PROC-03-0152, and 24590-WTP-SDDR-PROC-03-0153.</p> <p>Included applicable Technical Notes from Section 2 of the following MRs:</p> <p>24590-CM-MRA-PS02-00001, 24590-CM-MRA-PS02-00007, 24590-CM-MRA-PS02-00008, 24590-QL-MRA-PS02-00002, 24590-QL-MRA-PS02-00003, 24590-QL-MRA-PS02-00008, 24590-QL-MRA-PS02-00009 and 24590-QL-MRA-PS02-00011. Major rewrite; changes not noted in margins.</p>
2	<p>Incorporated SCN Nos. 24590-WTP-3PN-PS02-00001</p> <p>Incorporated 24590-WTP-3PN-PS02-00003 (Also changed NDE for 'Cat M All others' from 20% PT/MT to 20% RT, correcting typo in the SCN)</p> <p>Revised per 24590-WTP-SDDR-PROC-03-0022</p>
1	<p>Revised per 24590-WTP-DCN-PL-02-001, Rev 0 (No technical requirement change is involved. Changes are necessitated by the need to clarify requirements more fully and to conform requirements between referenced document associated with this</p>
0	<p>Issued for Construction</p>

Notice

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the US Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

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Appendices

Appendix A , <i>Summary Table of Non-Destructive Examinations (NDE) of Pipe & Tubing Shop Welds</i>	A-1
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1 General

1.1 Scope

This specification defines the requirements and the work necessary for fabrication of piping subassemblies (pipe spools) in accordance with the requirements of ASME B31.3, *Process Piping*, other codes and standards, and documents as referenced in this specification. This specification applies to all quality levels as specified by the purchase order.

1.1.1 Black Cell and Hard to Reach Piping

The WTP design incorporates the “black cell” concept as a key part of the facility design of the Pretreatment (PT) and the High-Level Waste (HLW) facilities. This entails locating certain equipment in the shielded cells for which no maintenance or entry is planned for the 40-year design life of the plant. Black cell (BC) Piping - all piping and tubing within a black cell up to the first weld outside the black cell.

There are areas of the WTP facilities that have components that are considered to be hard-to-reach (HtR) because of location and expected difficulty to perform repairs or maintenance which has the potential to impact mission life. HtR areas are designated as such based on R5 area radiation levels after removal of transient sources and decontamination and 1) piping and components cannot be manually or remotely maintained, and/or 2) piping and components are isolated physically by permanent plant equipment which cannot be manually or remotely removed. HtR piping extends out to the first accessible weld. There are no valves in BC areas, and there are no inaccessible valves in HtR areas.

The term “Black Cell Weld” applies to any weld in a BC pipe or pipe spool.

The term “Hard to Reach Weld” applies to any weld in an HtR pipe or pipe spool.

Isometrics issued prior to February, 2008 are reviewed by Buyer’s Engineering to determine whether a pipe spool is “BLACK CELL” or “HARD TO REACH” or not. This review and spool identification information is provided to the Supplier.

Isometric drawings issued on or after 1 February 2008 identify the pipe spools that are to be installed in black cells or hard-to-reach areas. The isometric drawing identifies each black cell or hard-to-reach pipe spool with a spool tag which will include the spool ID number and the words “BLACK CELL” or “HARD TO REACH”, as appropriate. Additionally, the respective isometric will have the words “CONTAINS BLACK CELL (or HARD TO REACH, as appropriate) PIPE” in large type located just above or beside the title block.

1.2 Work Included

- 1.2.1 Perform the following work for piping in systems listed in the purchase order in accordance with the requirements of this specification, its appendices, reference documents, and the applicable codes in accordance with the *Engineering Specification for Piping Material Classes General Description and Summary*, 24590-WTP-3PS-P000-T0001 (including the standards and documents referenced therein).

- 1.2.1.1 Furnish shop pipe spool sheets or extended spool sheets or detailed drawings when specifically required by the purchase order.
- 1.2.1.2 Furnish materials as required by the purchase order including pipe, fittings, flanges, and welding materials required for fabrication.
- 1.2.1.3 Fabricate pipe spools as follows:
 - 1.2.1.3.1 Fabricate pipe spools including the installation of fittings, nozzles, thermo well connections, radiographic access holes/bosses, breather holes when required, and the preparation of field welding ends.
 - 1.2.1.3.2 Fabricate dual containment piping spools, and offset piping assemblies (Joggles) that are either dual wall or single wall configurations.
 - 1.2.1.3.3 Fabricate Pipe Class S11A piping spools in accordance with this specification and ASME B31.3-1996. The Pipe Class S11A design code is the Uniform Plumbing Code.
- 1.2.1.4 Install valves, valve actuators, and other piping components and specialty items supplied by Buyer when required by the purchase order.
- 1.2.1.5 Supply and install integral structural attachments and supports as shown on piping isometric drawings, orthographic drawings, and/or detailed support drawings.
- 1.2.1.6 Perform post-weld heat treatment (PWHT) as required.
- 1.2.1.7 Perform all required testing and examinations.
- 1.2.1.8 Perform all required cleaning, coating, lining, preservation, and shipping preparation.
- 1.2.1.9 Chemically clean and/or pickle piping where indicated on the design drawings and/or the piping material class.
- 1.2.1.10 Mark pipe spools with identification numbers in accordance with the identification numbers shown on the piping isometric drawings, orthographic drawings, or other instructions furnished by the Buyer.
- 1.2.1.11 Furnish all required documentation.
- 1.2.1.12 Package fabricated spools and associated materials, with packing lists, for delivery to the jobsite.
- 1.2.1.13 Apply color coding for material lay down purposes when required by the purchase order.
- 1.2.1.14 Perform Positive Material Identification (PMI) on completed fabrication in accordance with specification 24590-WTP-3PS-G000-T0002, *Engineering Specification for Positive Material Identification (PMI) for Shop Fabrication*, and as required by Section 2.1.5. PMI is not to be performed on Buyer-furnished valves unless otherwise stated in the purchase order. Refer to Section 2.1.5.

- 1.2.1.15 Perform hydrostatic testing of fabricated spools when specifically required by contract documents using Buyer approved test procedures.
- 1.2.1.16 Perform pneumatic testing of fabricated spools when specifically required by contract documents using Buyer approved test procedures.
- 1.2.1.17 Supplier shall be responsible for submitting a progress report electronically on a weekly basis. This report shall identify the following information in both summary form and by detailed spool numbers with Buyer's piece mark indicated.
 - 1.2.1.17.1 Quantity of isometrics received during the period
 - 1.2.1.17.2 Quantity of spools identified
 - 1.2.1.17.3 Quantity of spools detailed
 - 1.2.1.17.4 Quantity of spools released to material control
 - 1.2.1.17.5 Quantity of spools in fabrication
 - 1.2.1.17.6 Quantity of spools complete through welding phase of fabrication
 - 1.2.1.17.7 Quantity of spools complete through radiography, heat treatment, testing, and painting
 - 1.2.1.17.8 Quantity of spools ready to ship
 - 1.2.1.17.9 Quantity of spools shipped
 - 1.2.1.17.10 Quantity of spools on hold, and reason for hold
- 1.2.1.18 Installing fusion-bonded epoxies for linings and coatings is within a Supplier's scope of supply when called for in the purchase order.

1.3 Related Work Not Included

- 1.3.1 The following items are not included in the Supplier's scope of work unless otherwise specified:
 - 1.3.1.1 Furnishing and installing flanged valves, specialty items, expansion joints, instrumentation (including sensing devices), relief valves, orifice plates, and flow elements
 - 1.3.1.2 Furnishing and installing pipe supports (except as noted in Section 1.2.1.5).
 - 1.3.1.3 Furnishing of cast or ductile iron pipe.
 - 1.3.1.4 Furnishing thermo wells.
 - 1.3.1.5 Furnishing and installing flow nozzles and associated hardware.
 - 1.3.1.6 Installing fabricated piping subassemblies in the field.

- 1.3.1.7 Furnishing and installing thermal insulation for piping.
- 1.3.1.8 Pressure testing of all piping, except as required by Sections 1.2.1.15 and 3.2.3 of this specification and the pressure test required by the applicable ASTM or ASME material specification.
- 1.3.1.9 Design of piping and preparation of piping drawings (except detailed spool drawings in accordance with Section 1.2.1.1).
- 1.3.1.10 Furnishing bolting materials, gaskets, insulating flange kits, or backing rings required for field assembly.
- 1.3.1.11 Pipe wall thickness and branch reinforcement calculations.

1.4 Codes and Standards

- 1.4.1 ASME B31.3 1996, *Process Piping*, is the piping code for the WTP Project.

For Q applications, the editions of reference codes, standards and specifications shown in Appendix E of ASME B31.3-1996 listed below, and those listed in 24590-WTP-3PS-PB01-T0001, *Engineering Specification for Technical Supply Conditions for Pipe, Fittings, and Flanges*, are acceptable for use. If the Supplier wants to use a later edition or addenda of a reference code, standard, or specification then the Supplier shall submit an SDDR.

When using ASTM material specifications for commercial material (CM) items, any version more recent than the ASTM version listed in Appendix E of ASME B31.3 1996 is acceptable. A SDDR is not required for these commercial material (CM) item ASTM material specification edition changes.

ASME materials identified in ASME Boiler & Pressure Vessel Code, Section II Material Specifications as being identical to the ASME B31.3, Appendix E listed ASTM Material Specifications, for the year, alloy, type and / or grade, (if applicable), are acceptable for use.

See Specification 24590-WTP-3PS-PB01-T0001, Section 2.1 for ASTM Material Specifications table for acceptable years.

- 1.4.1.1 The American Society of Mechanical Engineers (ASME)
 - ASME B16.11-1991, *Forged Fittings, Socket-Welding and Threaded*
 - ASME B16.25-1986, *Buttwelding Ends*
 - ASME B16.28-1986, *Wrought Steel Buttwelding Short Radius Elbows and Returns*
 - ASME B16.36-1988, *Orifice Flanges*
 - ASME B16.47-1990, *Large Diameter Steel Flanges NPS 26 through NPS 60*
 - ASME B16.5-1988, *Pipe Flanges and Flanged Fittings NPS 1/2 through NPS 24 Metric/Inches*

ASME B16.9-1986, *Factory-Made Wrought Butt welding Fittings*

ASME B36.10M-1985, *Welded and Seamless Wrought Steel Pipe*

ASME B36.19M-1985, *Stainless Steel Pipe*

1.4.1.2 ASME Boiler and Pressure Vessel Code (B & PV)

ASME B & PV Code Section V- latest edition, *Nondestructive Examination*

ASME B & PV Code Section VIII, Division 1, latest edition, *Rules for Construction of Pressure Vessels*

ASME B & PV Code Section IX- latest edition, *Welding and Brazing Qualifications*

1.4.1.3 American Society for Testing and Materials (ASTM) Material Specifications

For ASTM material designations, refer to 24590-WTP-3PS-PB01-T0001, *Engineering Specification for Technical Supply Conditions for Pipe, Fittings, and Flanges*.

1.4.1.4 Pipe Fabrication Institute (PFI) Standards

ES-7 - 1962 (R1984), *Minimum Length and Spacing for Welded Nozzles*

1.4.1.5 Manufacturers Standardization Society

MSS SP-25-1978 (R1988), *Standard Marking System for Valves, Fittings, Flanges, and Unions*

MSS SP-83-1987, *Class 3000 Steel Pipe Unions Socket Welding and Threaded*

MSS SP-95-1986 (R1991), *Swaged Nipples and Bull Plugs*

MSS SP-97-1987, *Integrally Reinforced Forged Branch Outlet Fittings*

1.4.2 Other Standards

The following standards are not reference standards of ASME B31.3, 1996, but are acceptable for use to facilitate ASME B31.3 piping fabrication, or are used for pipe fabrication that is not within the scope of ASME B31.3.

1.4.2.1 Pipe Fabrication Institute (PFI) Standards

ES - 3, *Fabricating Tolerance*

ES - 5, *Cleaning of Fabricated Piping*

ES - 16, (Deleted)

ES - 24, *Pipe Bending Methods, Tolerances, Process, and Material Requirements*

ES - 31, *Standard for Protection of Ends of Fabricated Piping Assemblies*

1.4.2.2 International Association of Plumbing & Mechanical Officials

Uniform Plumbing Code (UPC), 1997 Edition

- 1.4.3 In case of a conflict between the requirements of the referenced codes, standards, specifications, regulations, and procedures, the Supplier shall submit a recommended resolution to the Buyer via a Supplier Deviation Disposition Request (SDDR) for review and permission to proceed prior to implementation.

1.5 Reference Documents and Drawings

The entire list of documents below may or may not apply in all cases. Refer to the purchase order for a listing of those documents that are applicable.

- 1.5.1 24590-WTP-3PS-P000-T0001, *Engineering Specification for Piping Material Classes General Description and Summary*
- 1.5.2 24590-WTP-3PS-PS02-T0002, *Engineering Specification for Cold Bending of Pipe*
- 1.5.3 24590-WTP-3PS-NWP0-T0001, *Engineering Specification for General Welding and NDE Requirements for Supplier Fabricated Piping*
- 1.5.4 24590-WTP-3PS-AFPS-T0001, *Engineering Specification for Shop Applied Special Protective Coatings for Steel Items and Equipment*
- 1.5.5 24590-WTP-3PS-PX04-T0001, *Engineering Specification for Shop Applied Fusion Bonded Epoxy Coating for Underground Carbon Steel Pipe*
- 1.5.6 Deleted
- 1.5.7 24590-WTP-3PS-PX04-T0003, *Specification for Shop and Field Application of an Epoxy Coating for Underground Carbon Steel Fittings, Valves, and Special Items*
- 1.5.8 24590-WTP-3PS-PX04-T0004, *Engineering Specification for Epoxy Coating for Stainless Steel Items that are Buried, Embedded or Insulated*
- 1.5.9 24590-WTP-3PS-G000-T0002, *Engineering Specification for Positive Material Identification (PMI) for Shop Fabrication*
- 1.5.10 24590-WTP-3PS-G000-T0001, *General Specification for Supplier Quality Assurance Program Requirements*
- 1.5.11 24590-WTP-3PS-G000-T0003, *Engineering Specification for Packaging, Handling, and Storage Requirements*
- 1.5.12 Deleted

- 1.5.13 24590-WTP-PW-P30T-00001, *WTP End Prep Detail for Field Butt Welds*
- 1.5.14 24590-WTP-3PS-PB01-T0001, *Engineering Specification for Technical Supply Conditions for Pipe, Fittings, and Flanges*
- 1.5.15 Deleted

1.6 Quality Assurance

- 1.6.1 The Supplier shall develop and implement a Quality Assurance (QA) program in accordance with document 24590-WTP-3PS-G000-T0001 and 24590-WTP-3PD-PS02-00005, *Supplier Quality Assurance Program Requirements Data Sheet* as required in the purchase order.
- 1.6.2 The Supplier shall submit a copy of Supplier's QA manual for Buyer's review and permission to proceed. The Supplier shall be responsible to request Buyer's written permission to proceed for any revisions to the reviewed QA Manual and associated procedures. The Buyer or its representatives reserve the right to carry out quality audits of the Supplier or Sub-supplier's QA programs at any time during the period of the contract.

1.7 Cleaning and Coating

1.7.1 Cleaning

- 1.7.1.1 Perform cleaning after fabrication has been completed. Cleaned piping shall be free of loose rust or mill scale, blisters, grease, sand, oil, dirt, and other foreign materials.
- 1.7.1.2 Fabricated spools shall be cleaned in accordance with the standard cleaning method described in PFI-ES-5.
- 1.7.1.3 Clean austenitic stainless steel, nickel alloy, and titanium piping in a protected area that is free from airborne chloride contamination. Prevent contamination from non-stainless steel, non-nickel alloy or non-titanium particles such as machine chips, grinding dust, weld spatter, and other debris during fabrication by shielding or other suitable means.
- 1.7.1.4 Only austenitic stainless steel brushes not previously used on other material may be used on austenitic stainless steel piping.

Stainless steel wire brushes that have not been used on other materials shall be used to clean nickel alloy or titanium.
- 1.7.1.5 Where solvent is required to remove grease or oil from austenitic stainless steel piping, acetone, or alcohol (ethyl, methyl, or isopropyl) shall be used. Alternatively, a detergent flush may be used in lieu of solvent cleaning with prior permission to proceed from Buyer.

Cleaning solvents used for cleaning titanium materials are methyl alcohol, acetone, or other chlorine-free solvents.

Titanium weld preparation includes removing any oil, grease, dirt, or grinding dust from surfaces to be joined. Steam cleaning or an alkali dip in a dilute solution of sodium hydroxide can remove most of these contaminants. To remove the last remaining organic

compounds just before welding, use a lint-free glove and methyl alcohol, acetone, or other chlorine-free solvent.

1.7.1.6 Final cleaning materials in contact with austenitic stainless steel shall contain less than 200 ppm chlorides. If detergent cleaning is used, rinse austenitic stainless steel with potable water having no more than 100 ppm chloride content. After rinsing, the piping shall be drained out completely such that no standing pockets/puddles of water remain that may later concentrate by evaporation. Removal of excess rinse water may be augmented by swabbing, use of a "squeegee," or air blowing.

1.7.1.7 After cleaning, blow dry the interior surfaces of all piping with clean, filtered, oil-free air.

1.7.2 Pickling

When pickling of carbon steel piping is required by the design drawing and/or piping material class, the following shall apply:

1.7.2.1 Degrease to remove all protective coating.

1.7.2.2 Acid clean to remove mill scale, rust, and other foreign substances on the inside of the pipe, without loss of base metal.

1.7.2.3 Neutralize, rinse, and completely remove pickling solution.

1.7.2.4 Dry thoroughly. The interior of the pipe shall be free of mill scale, rust, acid, and all other foreign materials.

1.7.2.5 Coat the inside of pipe with one of the following rust preventatives (or Buyer-approved equal):

1.7.2.5.1 Lectra Shield and SP-400, CRC Industries

1.7.2.5.2 Mobilarma 247, Mobil

1.7.3 External Surface Coating

1.7.3.1 Apply external surface coating in accordance with specification 24590-WTP-3PS-AFPS-T0001, Appendix D, Item 3.30, 3.70, or 3.80.

1.7.3.2 Apply a preservative coating of Tempil "Bloxide" or D-C Sales & Engineering, Inc. (formerly known as AACCO) "Deoxaluminite" (or Buyer approved equal) weldable primer on all field weld end preparations to carbon steel surfaces including coating the hold back area.. Overlap onto the coating is acceptable. Weldable primers containing zinc are not acceptable.

1.7.3.3 Coat the exterior surfaces of buried carbon steel in accordance with specifications 24590-WTP-3PS-PX04-T0001 and 24590-WTP-3PS-PX04-T0003. Coat the exterior surfaces of buried or embedded stainless steel in accordance with specification 24590-WTP-3PS-PX04-T0004.

- 1.7.3.4 Do not paint the gasket seating surface of flange faces. The gasket seating surface of flange faces shall be cleaned and coated with a one of the following rust preventives:
 - 1.7.3.4.1 Grease (manufacturer's standard)
 - 1.7.3.4.2 Lectra Shield and SP-400, CRC Industries
 - 1.7.3.4.3 Mobilarma 247, Mobil
 - 1.7.3.4.4 Any preservative listed in specification 24590-WTP-3PS-AFPS-T0001

1.8 Packaging, Storage, Handling, and Protection

Packaging, handling, and storage of pipe spools are as list below. These requirements are based on the applicable requirements listed in Specification 24590-WTP-3PS-G000-T0003.

1.8.1 Sealing Openings

- 1.8.1.1 Comply with the minimum end protection requirements criteria outlined in PFI-ES-31 to protect all openings and/or as required in the purchase order. The Buyer must provide review and give permission to proceed prior to use of each specific type of desiccant material. Fabrications must be clearly marked indicating desiccant inside.
- 1.8.1.2 Cover all pipe openings with metal, polyethylene, or nonmetallic end caps, flange protectors, or plugs. Polyethylene or nonmetallic end caps and plugs shall be friction fit, (e.g., Niagara series) or secured by other means. At a minimum, one of the caps or plugs on each spool shall be provided with a 1/8-inch max diameter vent hole to preclude the buildup of internal pressure. Avoid placing the cap or plug with the vent hole on a spool that is oriented in an upward, vertical position. Tape shall not be used to secure end caps or plugs. Clamps used for securing end caps, on stainless steel or alloy spools, shall be made of stainless material.
- 1.8.1.3 Deleted

1.8.2 Marking

Additional marking requirements may apply for coaxial (i.e., double-contained) piping systems. Refer to the purchase order for additional marking requirements, if any, for coaxial piping.

- 1.8.2.1 Mark each section of fabricated pipe, pipe assembly, or separate fitting with appropriate piece mark. The spool piece mark number (example, LAW-PJV-PW00006001-A) is indicated on the isometric drawing. Mark spools of 15 feet or less in length once on one end. Mark spools greater than 15 feet in length once on each end, with markings appearing on opposite sides of the spool. Piece marks shall be stenciled or legibly hand lettered, in not less than 2-inch-high letters (when possible), with a black weatherproof marker. Piece marks shall not be placed on end caps or flange protectors. Piece marks shall be readable from a reasonable distance.
- 1.8.2.2 Place paint markings so that paint is at least 4 inches away from a surface to be welded.

1.8.2.3 Any marking material and packing tape used on stainless steel or alloy material is required to be made from low chloride (less than 200 ppm) and low sulfur (less than 400 ppm) type material. The Supplier shall provide a chemical analysis report of the marker/tape for each lot or typical representative sample. The chemical analysis report shall be submitted for Buyer's review and permission to proceed. A copy of the report is not required with each shipment of pipe spools.

1.8.2.4 Deleted

1.8.3 Protection During Shipping

1.8.3.1 Block, strap, or otherwise hold pipe, fittings, and valves in position and further separate them by dunnage as necessary to prevent damage during shipment.

1.8.3.2 Deleted

1.8.3.3 Deleted

1.9 Submittals

1.9.1 Preparing, maintaining, and submitting any documents for Buyer's review and permission to proceed does not relieve the Supplier from the responsibility of complying with the requirements of the purchase order.

1.9.2 Submit the following documents for Buyer's review and permission to proceed as specifically noted in the purchase order:

1.9.2.1 Quality Assurance Manual.

1.9.2.2 Pipe spool sheets/extended spool sheets/detailed drawings for shop-fabricated spools (including identification of shop welds), when specifically required in the purchase order. Shop spool drawings and/or extended spool sheets based on isometric drawings provided by the Buyer may be generated by the Supplier. However, unless otherwise noted in the purchase order, pipe spool sheets/extended spool sheets/detailed drawings are not required to be submitted for review and permission to proceed. Final Supplier Quality inspection will be in accordance with the isometric or orthographic drawing, as applicable.

1.9.2.3 Deleted

1.9.2.4 Welding/weld repair procedures and procedure qualification records (WPS/PQR).

1.9.2.5 Nondestructive examination (NDE) procedures prepared in accordance with the applicable code and/or standard, and ASME Section V and NDE reports including all radiographs as applicable to the purchase order and piping material class.

1.9.2.6 Acid cleaning and/or pickling procedures.

1.9.2.7 Cleaning and coating procedures. Refer to documents 24590-WTP-3PS-AFPS-T0001, 24590-WTP-3PS-PX04-T0001, 24590-WTP-3PS-PX04-T0003, and 24590-WTP-3PS-

PX04-T0004. For components that are not coated, cleaning procedures only are to be submitted.

- 1.9.2.8 Shipment preparation procedure.
- 1.9.2.9 Bending procedures and bend qualification records.
- 1.9.2.10 Deleted
- 1.9.2.11 Positive Material Identification (PMI) procedure.
- 1.9.2.12 Wall thickness measurement procedure for pipe bends.
- 1.9.2.13 Inspection and test plan.
- 1.9.2.14 Inspection procedure.
- 1.9.2.15 Chemical analysis report for marking material and packing tape.
- 1.9.2.16 Each specific type of desiccant material.
- 1.9.2.17 Procedure for measuring minimum wall thickness for bulk pipe and butt weld fittings. Submittal shall include Supplier's inspection and sampling plan. The term "butt weld fitting" includes elbows, tees, reducers, caps, laterals, crosses, and swages; however, it excludes, pipe nipples, flanges, socket weld fittings, and integrally reinforced fittings.
- 1.9.2.18 Deleted - see Section 1.2.1.17.
- 1.9.3 The following documentation shall be submitted for each spool as appropriate, with the spool shipment:
 - 1.9.3.1 Pipe spool sheets/extended spool sheets/detailed drawings (as applicable) with heat numbers of piping and pressure containing parts or items.
 - 1.9.3.2 Material test reports (MTRs) shall be submitted for each pipe spool shipment for all metallic pipe spool and weld filler materials. This is not applicable to Buyer supplied valve and /or components.
 - 1.9.3.3 PMI results for individual items and weld deposits.
 - 1.9.3.4 NDE results (including volumetric, surface, and visual examination results, as applicable) shall be documented and forwarded with the pipe spool shipment. For Q pipe spools, HLW pipe spools, and PTF pipe spools, actual NDE test results shall be submitted. CM pipe spools outside the HLW and PTF require a Certificate of Conformance (C of C) certifying the NDE was performed in accordance with the applicable codes and the test results were acceptable.
 - 1.9.3.5 Pressure test results for fabricated piping, as applicable. CM pipe spools require a Certificate of Conformance (C of C) from the vendor certifying the pressure test was performed in accordance with the applicable codes and the test results were acceptable. For

Q pipe spools and black cell and hard-to-reach pipe spools, actual pressure test results shall be submitted with the pipe spool shipment.

1.9.3.6 Cleaning and Coating Verification reports refer to the pre-cleaning of fabricated spools that are specified to receive an exterior surface coating. A Cleaning and Coating Verification report is not required to be submitted for the “standard cleaning” of pipe spools not requiring coating after fabrication has been completed.

1.9.3.7 Wall thickness measurement reports. Wall thickness measurement applies to pipe bends, piping, bulk piping, and butt weld fittings. The wall thickness reports are to be submitted for these components for each heat/lot used for spool fabrication. In addition, the applicable bulk pipe and butt weld fitting wall thickness report is to be linked to every pipe and fitting on each extended spool sheet or referenced on each extended spool sheet where that heat/lot of pipe or butt weld fittings has been used. The term “butt weld fitting” includes elbows, tees, reducers, caps, laterals, crosses, and swages; however, it excludes pipe nipples, flanges, socket weld fittings, and integrally reinforced fittings.

This requirement is not applicable to CM carbon steel pipe bends, piping, bulk piping, and butt weld fittings.

1.9.3.8 Record of any major weld repairs. A major weld repair is when the depth of repair encroaches on specified minimum wall thickness which is 87 1/2% of generally published specification or standard nominal wall thickness. CM pipe spools require a C of C from the vendor certifying a major repair was performed and accepted in accordance with the applicable Buyer reviewed procedure where the Supplier has been granted permission to proceed. The C of C shall identify the spool piece mark and the work performed. For black cell, hard-to-reach, and “Q” pipe spools, actual record of major repair results shall be submitted with the pipe spool shipment.

Per Section 2.1.9, base metal repairs using welding shall not be performed.

1.10 Design Documents Incorporated by Reference

1.10.1 Deleted

1.10.2 24590-WTP-SDDR-PROC-02-0137, *Supplier Deviation Disposition Request*

1.10.3 24590-WTP-NCR-CON-02-137, *Nonconformance Report*

1.10.4 24590-WTP-SDDR-PROC-02-0124, *Supplier Deviation Disposition Request*

1.10.5 24590-WTP-SDDR-PROC-03-0152, *Supplier Deviation Disposition Request*

1.10.6 24590-WTP-SDDR-PROC-03-0153, *Supplier Deviation Disposition Request*

1.10.7 24590-WTP-SDDR-PROC-03-0391, *Supplier Deviation Disposition Request*

1.10.8 24590-WTP-SDDR-PROC-03-0410, *Supplier Deviation Disposition Request*

1.10.9 24590-WTP-CDR-CON-03-058, *Construction Deficiency Report*

- 1.10.10 24590-WTP-SDDR-PROC-04-00453, *Supplier Deviation Disposition Request*
- 1.10.11 24590-WTP-CDR-CON-04-0094, *Construction Deficiency Report*
- 1.10.12 24590-WTP-CDR-CON-04-0103, *Construction Deficiency Report*
- 1.10.13 24590-WTP-NCR-CON-04-0254, *Nonconformance Report*
- 1.10.14 24590-WTP-SDDR-PROC-04-00453, *Supplier Deviation Disposition Request*
- 1.10.15 24590-WTP-SDDR-PROC-04-00834, *Supplier Deviation Disposition Request*
- 1.10.16 24590-WTP-SDDR-PROC-04-00859, *Supplier Deviation Disposition Request*
- 1.10.17 24590-WTP-SDDR-PROC-04-00950, *Supplier Deviation Disposition Request*
- 1.10.18 24590-WTP-SDDR-PROC-04-00951, *Supplier Deviation Disposition Request*
- 1.10.19 24590-WTP-SDDR-PROC-04-00952, *Supplier Deviation Disposition Request*
- 1.10.20 24590-WTP-SDDR-PROC-04-00979, *Supplier Deviation Disposition Request*
- 1.10.21 24590-WTP-SDDR-PROC-04-00996, *Supplier Deviation Disposition Request*
- 1.10.22 24590-WTP-SDDR-PROC-04-01006, *Supplier Deviation Disposition Request*
- 1.10.23 24590-WTP-SDDR-PROC-04-01007, *Supplier Deviation Disposition Request*
- 1.10.24 24590-WTP-SDDR-PROC-05-00058, *Supplier Deviation Disposition Request** (This applies to CM pipe spools only.)
- 1.10.25 24590-WTP-SDDR-M-05-00024, *Supplier Deviation Disposition Request*
- 1.10.26 24590-WTP-SDDR-PL-05-00060, *Supplier Deviation Disposition Request*
- 1.10.27 24590-WTP-SDDR-PL-05-00063, *Supplier Deviation Disposition Request*
- 1.10.28 24590-WTP-SDDR-PL-06-00001, *Supplier Deviation Disposition Request*
- 1.10.29 24590-WTP-SDDR-PL-06-00005, *Supplier Deviation Disposition Request*
- 1.10.30 24590-WTP-SDDR-PL-06-00008, *Supplier Deviation Disposition Request*
- 1.10.31 24590-WTP-SDDR-PROC-05-00759, *Supplier Deviation Disposition Request*
- 1.10.32 24590-WTP-SDDR-PL-09-00008, *Supplier Deviation Disposition Request*
- 1.10.33 24590-WTP-SDDR-PL-09-00017, *Supplier Deviation Disposition Request*
- 1.10.34 24590-WTP-SDDR-MS-08-00084, *Supplier Deviation Disposition Request*

1.10.35 24590-WTP-SDDR-MS-09-00067, *Supplier Deviation Disposition Request*

2 Products

2.1 Materials

2.1.1 General

2.1.1.1 All materials shall conform to the specified material specification and the applicable code. All materials shall be new and traceable to the respective MTRs.

2.1.1.1.1 For all Q piping and black cell (BC) and all hard-to-reach (HtR) area piping, each heat/lot of bulk pipe and butt weld fittings shall be examined to establish that the minimum wall thickness meets or exceeds 87 1/2% of generally published specification or standard nominal wall thickness. This requirement applies to both CM and Q piping in black cells and hard-to-reach areas and to all associated butt weld fittings. The term "butt weld fitting" includes elbows, tees, reducers, caps, laterals, crosses, and swages; however, it excludes pipe nipples, flanges, socket weld fittings, and integrally reinforced forged welded branch fittings.

2.1.1.1.2 For all Q piping and all black cell piping and all hard-to-reach piping identify material by the specific ASTM or ASME material specification number and grade or type on shop spool drawings and extended spool sheets (as applicable), along with heat number or heat number code applied to or maintained on the piping material, traceable to the Material Test Report (MTR).

For CM piping, outside BC or HtR areas, identify material by the specific ASTM or ASME material specification number and grade or type on shop spool drawings and extended spool sheets (as applicable), along with heat number or heat number code applied to or maintained on the pipe, traceable to the MTR.

2.1.1.2 Unless otherwise identified on piping design drawings, all materials shall conform to the piping material classes for the pipe class, except as allowed by specification 24590-WTP-3PS-PB01-T0001 and as specified below.

Seamless pipe and fittings, if available, are preferred in all cases, including use in black cell or hard-to-reach areas.

2.1.1.2.1 Where material is specified as triple stamped, seamless A106/A53/API 5L Grade B, the following single stamped materials are acceptable:

- (a) A106 Grade B
- (b) Seamless A53 Grade B
- (c) Seamless API 5L Grade B

2.1.1.2.2 Where material is specified as double stamped, seamwelded A53/API 5L Grade B, the following single stamped materials and/or triple stamped material are acceptable:

- (a) Seamwelded A53 Grade B
 - (b) Seamwelded API 5L Grade B
 - (c) Seamless A53/A106/API 5L Grade B
- 2.1.1.2.3 Where material is specified as dual grade Type 316/316L stainless steel, a single grade Type 316L is acceptable. Single grade Type 316 is not acceptable.
- 2.1.1.2.4 Where material is specified as dual grade Type 304/304L stainless steel, a single grade Type 304L is acceptable. Single grade Type 304 is not acceptable.
- 2.1.1.2.5 Where the purchase order description specifies pipe to be furnished “Beveled Both Ends,” pipe furnished with “Plain Ends” is acceptable.
- 2.1.1.2.6 Where the purchase order description specifies pipe is to be furnished “Double Random Lengths,” pipe furnished in “Single Random Lengths” is not acceptable.
- 2.1.1.2.7 Where ASTM B675, N08367 Class 1 pipe with hydrostatic test is specified, ASTM B675, N08367 Class 2 pipe with hydrostatic test is acceptable.
- 2.1.1.2.8 Where ASTM B619 UNS N06022 Class I pipe is specified, ASTM B619 UNS N06022 Class II is acceptable. The hydrostatic and nondestructive electric tests specified for Class I shall also apply to Class II pipe.
- 2.1.1.2.9 Double Submerged-Arc Welded (DSAW) API 5L Grade B is acceptable in lieu of Electric Resistance Welded (ERW) API 5L Grade B for all pipe sizes larger than NPS 24.
- 2.1.1.3 Individual line service class material will be identified on piping design drawings by indicating the appropriate piping class. Stock codes will generally be assigned for each item of shop material. The supplier shall ensure that the stock code shown on the isometric Bill of Material matches stock codes attached to or inscribed on materials prior to their installation.
- 2.1.1.4 Moved to Section 2.1.1.1.2.
- 2.1.1.5 The Supplier shall purchase material based on the Buyer stock code’s “long” or “purchase” description. The Buyer’s short description shall not be used for purchasing material.
- 2.1.2 **Material Traceability**
- 2.1.2.1 Material traceability (such as identification of the item to applicable material specification, heat, batch, lot, part, or serial number or specified inspection, test, or other records) also includes transferring material identification mark(s) prior to subdividing material for all piping material. Traceability is being able to trace the piping material to the applicable MTR. All piping material, regardless of quality level, requires traceability.
- 2.1.2.2 As a minimum, individual spools shall have a pipe spool sheet, extended spool sheet, or detailed drawing that reflects the heat number of pressure containing items. Heat numbers and general PMI locations of piping and pressure containing parts or items shall be noted on the pipe spool sheet, extended spool sheet, or detailed drawing for material traceability. A pipe spool sheet, extended spool sheet, or detailed drawing may be defined as the actual

fabrication detail drawing, Bill of Materials, and/or traveling data table for that spool piece. Second sheets, if used, that provide spool material heat number information that is not shown on the pipe spool sheet, extended spool sheet or detailed drawing shall list the pipe spool number in order to maintain traceability. These sheets/drawings shall accompany each shipment of fabricated spools.

- 2.1.2.3 The Supplier is not required to submit MTRs for "Customer Furnished" weld-in valves. Traceability of these valves to the original procurement source will be the responsibility of the Buyer. The Supplier shall notify the Buyer if tags (see Section 2.1.8.5) on Customer-furnished valves are missing.

2.1.3 NDE Requirements for Manufacturer's Materials used in Black Cell and Hard-to-Reach Pipe Spools

- 2.1.3.1 All black cell and hard-to-reach pipe spools fabricated using seam welded pipe and / or seam welded fittings shall have the seam weld tested 100% volumetrically (using either ultrasonics or radiography) by the pipe/fitting manufacturer in accordance with the pipe classification requirements and the requirements of Section 2.1.3.5 through 2.1.3.10. A copy of the testing Certificate of Conformance, or other documentation that shows the volumetric exam was performed and found to be acceptable, shall be forwarded to Buyer with the spool shipment. The notation of these NDE results on the applicable material test report that is supplied with the spool shipment is acceptable.

- 2.1.3.2 Where the seam welded pipe and / or fitting was received without adequate testing and / or certification to the pipe classification, the Supplier may augment the testing by performing the missing or questionable examinations to the requirements of the pipe classification, documenting the test results, and submitting copies of the documentation with the pipe spool shipment.

- 2.1.3.3 Ultrasonic testing (UT) of the seam weld shall be performed in accordance with:

- the ASTM specification under which the pipe or fitting was procured.
- or, in accordance with ASME B31.3-96, para. 344.6 except that indications characterized as cracks, lack of fusion, or incomplete penetration is unacceptable regardless of length. Imperfections which produce a response greater than 20% of the reference level shall be investigated to the extent that the operator can determine the shape, identity, and location of all such imperfections and evaluate them in accordance with the acceptance standards given above.

- 2.1.3.4 Radiographic testing (RT) of the seam weld shall be performed in accordance with:

- the ASTM specification under which the pipe or fitting was procured.
- or, in accordance with ASME B31.3-96, para. 344.5 except that incomplete penetration and internal undercut shall not be permitted.

- 2.1.3.5 Comply with ASTM B619 (UNS N06022), as applicable, using ultrasonic testing for Class I or II seam welded piping to be performed in accordance with ASTM B775.

- 2.1.3.6 Comply with ASTM B675 (UNS N08367) Class 1 seam welded piping, as applicable, using ultrasonic testing in accordance with ASTM B775. ASTM B675 Class 2 seam welded piping shall be hydrostatically tested and ultrasonically tested in accordance with ASTM B775.
- 2.1.3.7 Comply with ASTM B366, as applicable, which requires 100% radiography of all welds made using filler material for Class WPHC22-W (UNS N06022) fittings (Pipe Class N11E). ASTM B366 requires 100 % radiography in accordance with ASME Section VIII, Div. 1, UW-51, of all welds made with or without filler material for Class WP6XN-WX (UNS N08367) fittings (Pipe Classes N11F, N11K), except that the starting material manufacturer or fitting manufacturer has the option to ultrasonically test in accordance with Appendix 12 of ASME Section VIII, Div. 1.
- 2.1.3.8 Comply with ASTM A403, as applicable, which requires 100% radiography for the entire length of all seam welds made with or without filler materials for Class WP316/316L-WX fittings (Pipe Class S11B) in accordance with UW-51 of ASME Section VIII, Div. 1.
- 2.1.3.9 Deleted
- 2.1.3.10 All ASTM A312 seam welded pipe, to be installed in black cell and hard-to-reach areas, shall have the seam welds 100% volumetrically inspected by the manufacturer, using radiography in accordance with ASME Section VIII, Div. 1, UW-51.
- 2.1.3.11 Black cell and Hard-to-Reach seam welded fittings are no longer required to have the seam weld 100% dye penetrant tested (PT). Seam welded fittings that were PT tested and passed are acceptable. Seam welded fittings which did not pass the PT test of the seam weld are not acceptable.

2.1.4 NDE for Pipe and Fitting Materials in High Level Waste (HLW) and Pretreatment Facility (PTF) Outside Black Cells or Hard-to-Reach Areas.

Longitudinal seam welds in seam welded Stainless Steel, Hastelloy, AL-6XN, Inconel and Titanium pipe and fittings that are not in black cell and hard-to-reach areas but are within the HLW and PTF shall be 100% volumetrically (UT or RT) examined. HLW and PTF piping can be identified by the spool piece mark number (example, HLW-BSA-GB0001103-A). Based on service applications this requirement is not applicable to seam welded carbon steel pipe and fittings within the HLW and PTF.

Stainless Steel, Hastelloy, AL-6XN, Inconel, and Titanium seam welded pipe and fittings that had the seam weld UT examined are no longer additionally required to have the seam weld 100% dye penetrant tested (PT). Seam welded pipe and fittings that were PT tested and passed are acceptable. Seam welded pipe and fittings which did not pass the PT test are not acceptable.

2.1.5 Positive Material Identification (PMI)

To ensure material is correctly supplied as specified, the Supplier shall perform Positive Material Identification (PMI) tests in accordance with Specification 24590-WTP-3PS-G000-T0002. The Supplier shall submit their PMI test procedure for Buyer's review and permission to proceed. Note that PMI is not applicable for carbon steel materials and titanium materials. PMI is not to be performed on Buyer furnished valves unless otherwise stated in the purchase order.

Positive Material Identification (PMI) shall be used to check to ensure that the correct material has been used in black cell and hard-to-reach shop fabricated piping.

2.1.6 Material Commitment

The Supplier shall submit to the Buyer a complete itemized listing of all materials purchased or reserved from the Supplier's inventory for each project. The Supplier shall also provide, upon request, the current status of pre-bought or Buyer-furnished material.

2.1.7 Material Substitutions

All materials shall be in accordance with the Buyer-furnished drawings, the purchase order, and specifications, unless written permission to proceed is granted by the Buyer via the SDDR in accordance with the purchase order requirement.

2.1.8 Material Identification and Marking

- 2.1.8.1 All materials shall be marked with the information and using marking materials required by the specific ASTM or ASME material specification.
- 2.1.8.2 Labeling with a marking pen on stainless steel and nickel based alloy material shall be done by any permanent method that will neither result in harmful contamination or sharp discontinuities, nor infringe upon the minimum wall thickness. All marking materials other than material manufacturer's marks shall be of the low chloride (less than 200 ppm) and low sulfur (less than 400 ppm) type. It is acceptable to use a rounded, low stress, vibro-etch tool for this marking.
- 2.1.8.3 Weld identification symbols must be recorded on detailed spool sheets and extended spool sheets (as applicable) with a cross-reference to any NDE report numbers.
- 2.1.8.4 Any piece of material not readily identifiable during fabrication shall be rejected, including other components welded thereto.
- 2.1.8.5 All valves installed by the Supplier shall be tagged after being welded into the pipe spool (this tag is in addition to the tag being furnished with the valve). Each tag shall be stamped (not etched) with the individual "unique" valve identification number specified on the face of the isometric drawing (example, CHW-V-04558). Tags shall be 1/2 in. by 2 in. (min.) rectangle or 1 in. diameter (min.) stainless steel material and securely attached to the valve with 1/32 in. diameter (min.) braided stainless steel wire. Characters shall be 3/16 in. (min.) height.
- 2.1.8.6 Class 600 SW end ball valves, when identified with the proper Buyer stock code, are acceptable to be used where the valve description, both short (listed on the isometric Bill of Material) and the purchase description (specified in the piping class), specifies 150 or 300 SW end ball valves.

2.1.9 Damaged Materials

- 2.1.9.1 Materials that have been damaged, gouged, or found to have defects affecting their form, fit, function, or encroaching on minimum wall thickness, shall not be used. Minor surface

marks may be dressed, provided that the minimum wall thickness is not encroached upon after considering the manufacturing tolerances defined in the appropriate material or technical specification. Raised metal shall be blended into surrounding base metal. Base material repair of damaged material, using welding shall not be permitted.

- 2.1.9.2 Particular care must be taken with flange faces. Radial grooves or scratches are not permitted. Re-facing or repair of damaged flange facing is not permitted.
- 2.1.9.3 Deleted
- 2.1.9.4 The Supplier shall not make any base metal material repairs using welding.

3 Execution

3.1 Fabrication

3.1.1 General

- 3.1.1.1 Fabricated piping shall be in accordance with Buyer-furnished design drawings and specifications. This includes fabrication of the Pipe Class S11A piping spools in accordance with ASME B31.3-96. Use welded joint construction for all piping, except where otherwise called for on the design drawings and the piping material class.
- 3.1.1.2 Make all welds full penetration butt welds except as permitted otherwise for welded attachments, socket welds, slip-on flanges, and joggle pipe jacket. Mark all welds with welder's unique identification marks. It is acceptable to use a rounded, low stress, vibro-etch tool for this marking.
- 3.1.1.3 All flanges shall be installed with the bolt holes straddling the vertical centerline unless otherwise specified on the design drawings.
- 3.1.1.4 All welds performed by a supplier shall be shown on vendor spool sheets and extended spool sheets, as applicable. Additional requirements are as follows:
 - 3.1.1.4.1 Pipe lengths composed of two or more welded-together segments of straight pipe at intervals of less than 6 feet are not permitted, except as specified in Sections 3.1.1.4.2 and 3.1.1.4.3.
 - 3.1.1.4.2 Shop butt welds not represented on the isometric drawing(s) may be added to fabricate the spool(s) in accordance with the general configuration portrayed on the isometric drawing(s), provided the additional welds do not rest on pipe supports and provided the additional weld is not within 2 feet of existing butt welds or additional new butt welds. Bends shall not be replaced by elbows without prior written concurrence from the Buyer. The minimum required edge distance (D) between an integral attachment to the pipe and pipe weld or other inline components is provided in the table below. (The equation used to develop this table is \sqrt{Rmt} . Rm = Mean Radius of the pipe and t = thickness of the pipe.)

Table 1 Minimum Required Edge Distance Between Field and Shop Welds

Nominal Pipe Size (inches)	D (inches)
3" and under	1
3.5" to 6"	1 5/8
8" to 12"	2 3/4
14" to 18"	3 7/8
20" to 24"	5 1/8

- 3.1.1.4.3 Addition of butt welds is preferred over the addition of socket welds, even in a socket welded system. However, socket welded couplings may be added by the Supplier to socket welded piping systems, provided the couplings are not located any closer than 2 feet from other welds, and provided the added couplings do not rest on pipe supports. No socket welds are allowed on black cell or hard-to-reach piping unless specifically shown on the Buyer's isometric drawing.
- 3.1.1.5 Deleted
- 3.1.1.6 Welding of titanium shall be performed in a clean area, isolated from all grinding, torch cutting, and painting. In addition, the welding area shall be protected from wind, rain, and other harmful weather conditions which may affect weld quality.
- 3.1.1.7 The following are the requirements for titanium fabrication:
- 3.1.1.7.1 Grinding or sanding wheels used on titanium shall contain no aluminum, (i.e. carbide-grit wheels are required). When grinding, the surface temperature shall be kept below 500°F.
- 3.1.1.7.2 Gas backing is required when welding titanium.
- 3.1.1.7.3 Argon must be used for titanium shielding and purging gases and must meet the requirements of AWS A5.32, Classification SG-A with a minimum purity of 99.999% or Buyer approved equal.

- 3.1.1.7.4 When welding titanium, separate gas supplies are needed for:
- Primary shielding of the molten weld puddle.
 - Secondary shielding to cool the recently-made weld deposit and associated heat-affected zones.
 - Backup shielding for the backside of the weld and associated heat-affected zones.
- 3.1.1.7.5 For titanium base metals, do not use oxy-fuel torches for preheating. Instead, use a small, hot-air blower (hair dryer-style) to warm the part slightly to ensure that no moisture has condensed on the surface to be welded.
- 3.1.1.7.6 When welding titanium, each bead and the adjacent metal shall be cleaned to remove all surface discoloration prior to deposition of the next bead.
- Even though a clean, silver-colored weld is desirable, the final weld surface may have intermittent straw-colored oxides. Blue-colored weld surfaces are unacceptable
- 3.1.1.8 Pipe Class C12B or C14A isometrics with DB (high pressure steam) in fluid code portion of the isometric drawing number shall have the longitudinal seam weld of horizontal piping runs oriented in the 12 o'clock "up" position.

3.1.2 Weld Joint Preparation

- 3.1.2.1 Unless otherwise noted on the design drawings, field butt weld end preparations shall be in accordance with drawing 24590-WTP-PW-P30T-00001.
- 3.1.2.2 Do not use backing rings.

3.1.3 Bending

Pipe bending shall be in accordance with document 24590-WTP-3PS-PS02-T0002, except as follows:

- 3.1.3.1 Refer to standard PFI ES-24, Paragraph 5.1, for tolerances associated with specific bend angles as shown on project isometric drawings. Also, refer to PFI-ES-24, Paragraph 6 for form tolerances related to buckling.
- 3.1.3.2 Where bends shown on isometric drawings are labeled with no specific bend angle shown, the bend angle is understood to be 90 degrees. The tolerances in the previous subparagraph also apply to these bends.
- 3.1.3.3 Where a pipe class notes that the specified pipe thickness includes an allowance for thinning due to bending, the minimum wall thickness after bending shall not be less than the specified nominal wall thickness minus the 12-1/2 % mill tolerance allowed by the material specification, minus an additional thinning allowance due to bending. Accordingly, where 20 % thinning is allowed due to bending, the aggregate allowable

minimum wall thickness, at the bend, results in (1 - 0.125) times (1 - 0.20) or 70 % of the specified pipe nominal wall thickness. Thinning that exceeds that allowed in the pipe class shall be brought to Buyer's attention via an SDDR.

3.1.4 Dimensional Tolerances, Except For Pipe Bends

Unless otherwise indicated on the design drawing, do not exceed the dimensional tolerances of PFI-ES-3 for fabricated piping assemblies.

3.1.5 Welding Processes

Use welding processes in accordance with document 24590-WTP-3PS-NWP0-T0001 and the applicable code and/or standard.

3.1.6 Welding Procedures and Welder Qualifications

3.1.6.1 Welding shall be performed by qualified welders in accordance with welding procedures prepared and qualified in accordance with the applicable code and/or standard, and ASME Section IX using procedures reviewed by the Buyer and after receiving permission to proceed.

3.1.6.2 Type 316L or Type 316LSi weld filler metal may be used for welding Type 304L stainless steel.

3.1.7 Flanges

Furnish flanges for flanged connections in accordance with the piping material classes and as shown on design drawings.

3.1.7.1 All slip-on flanges shall be double welded in accordance with paragraph 328.5.2 of ASME B31.3 unless directed otherwise by design document(s).

3.1.7.2 There shall be no flanged or threaded connections in the Black Cell or Hard-to-Reach areas unless specifically directed otherwise by the Buyer's isometric drawing.

3.1.8 Branch Connections

3.1.8.1 Branch connections shall be in accordance with the applicable piping material class (es).

3.1.8.2 Threaded branch fittings on piping spools that have been hot-dip galvanized shall have the threads "chased" after dipping to ensure that threads are free from excess galvanizing materials that would prevent the threaded joints from being made up upon installation.

3.1.9 Orifice Runs

Straight pipe orifice runs shall not contain welds, except at flanges. Pipe ends at orifice flanges shall be machine cut perpendicular to the pipe axis. Welds at orifice flanges shall be ground smooth inside. Pipe tap connections (if required) are to be drilled through the pipe wall and shall be smooth inside. Orifice flanges shall be drilled and tapped for jack screws. Buyer supplied drawings show the orientation of

orifice flange taps and the locations of pipe taps. Unused orifice flange taps shall be supplied with appropriate plugs.

3.1.10 Valves

- 3.1.10.1 Install all valves in accordance with the manufacturer's recommended instructions and design drawings. Buyer shall furnish valve manufacturer's installation/disassembly instructions for Supplier's use and reference. The Supplier shall notify the Buyer if they have not been sent the applicable valve manufacturer's installation/disassembly instructions.
- 3.1.10.2 In addition to manufacturer's instructions, the following apply for valve installation:
 - 3.1.10.2.1 Valve stems shall be positioned in accordance with the isometric and is normally not be inclined below the horizontal. Also, flow arrows, when present on the valve, must align with the flow arrow shown on the isometric.
 - 3.1.10.2.2 Before conducting any welding on diaphragm valves or other soft-seated valves, the bonnet assembly and diaphragm, and any other heat-sensitive components shall be disassembled and valve body cooled, if required by vendor instructions. Particularly for stainless steel valves, care shall be exercised to ensure that contact with cooling medium (e.g., water-soaked wick) is not harmful. Water used for cooling of stainless steel valves shall have a maximum chloride content of 200 ppm.
 - 3.1.10.2.3 To prevent damage or distortion to valve seat and disc, follow the vendor's instructions with respect to position of the valve stem and the disc during installation and welding.
 - 3.1.10.2.4 If disassembly beyond the vendor's standard installation instruction is required, valves and actuators shall be disassembled and reassembled only after documented concurrence has been obtained from the Buyer that doing so will not compromise the warranty and performance of the valve.
 - 3.1.10.2.5 Manual valves shall be disassembled and reassembled, if required, in accordance with the manufacturer's disassembly and reassembly procedures.
 - 3.1.10.2.6 Valves shall be handled and supported with care to preclude damage to handwheels and appurtenances. Lifting lugs shall be used whenever they are provided on a valve. In no case shall a valve be picked up by the valve actuator

3.1.11 Rework of Fabricated Spools

- 3.1.11.1 Reworked spools being shipped to the jobsite shall be provided with a Certificate of Conformance (C of C) stating the spools identified are the same spool number(s) originally delivered and received. The C of C shall state that the re-worked spools are in strict accordance and fully comply with the purchase order and all procedures and specifications. The C of C shall also state the re-work performed on each spool.

If additional materials are added, or if additional documentation is provided (NDE reports, MTRs, etc.) a complete documentation package for that spool shall be furnished.

3.2 Inspection and Testing

3.2.1 General

- 3.2.1.1 The Supplier is responsible for nondestructive examination and testing of piping furnished under this specification.
- 3.2.1.2 All examination, inspection, and testing shall be in accordance with this specification and other governing codes and standards, as applicable. This includes nondestructive examination of the piping spools in accordance with the requirements for Normal Fluid Service piping in ASME B31.3-96.
- 3.2.1.3 Buyer's representative shall be provided free access to the Supplier's and Supplier's subcontractor's or Supplier's facilities, to witness, inspect, and report progress of work.
- 3.2.1.4 Note: No sub-supplier shall perform NDE work without prior submittal of the sub-supplier's NDE procedure and Buyer's review and permission to proceed.

3.2.2 Examination of Fabrication Welds

- 3.2.2.1 Examine all completed pressure boundary welds in accordance with the ASME B31.3-96 and/or standard, including the requirements listed below, as applicable. Weld repair shall be examined according to the requirements used for the original weld.
- 3.2.2.2 Perform and evaluate examinations in accordance with procedures and acceptance standards prepared in accordance with the ASME B31.3-96 and/or standard, and the *ASME Boiler & Pressure Vessel Code*, Section V.

3.2.2.3 BC and HtR Weld NDE and Inspection Requirements

The NDE and inspection requirements for the BC and HtR welds, which are in excess of ASME B31.3-96, are provided in Appendix A. The acceptance criteria are as listed in ASME B31.3, Table 341.3.2, for Normal Fluid Service Conditions with the following additions:

- 3.2.2.3.1 Where radiographic examination (RT) is allowed or specified for shop welds, the radiographic acceptance criteria for Normal Fluid Service apply, except that incomplete penetration and internal undercut shall not be permitted.
- 3.2.2.3.2 Where liquid penetrant examination (PT) or magnetic particle examination (MT) is allowed or specified, no cracks shall be permitted.
- 3.2.2.3.3 The material manufacturer is required to perform 100% full volumetric examination, either by radiographic (RT) or ultrasonic (UT) methods, as allowed by the applicable material specification, for all longitudinal seam welds in pipe and fitting material using the examination techniques in accordance with the requirements of applicable material specification. Where these inspections have not been performed, as required, by the piping manufacturer, the Supplier may perform them to the specified material specification requirements. The results of this inspection shall be included in the spool documentation package.
- 3.2.2.3.4 Fillet welds, called out on the piping isometrics require NDE in accordance with ASME B31.3, para 341.4.1 except these welds require 100% visual examination, and 100% liquid penetrant (PT) or 100% magnetic particle examination (MT).
- 3.2.2.3.5 For integrally reinforced forged branch fittings:
 - A full radiographic examination of the single bevel groove weld connecting the fitting to the run pipe is required unless it will not produce an interpretable radiograph, in which case, in-process examination and liquid penetrant examination of the exterior of the root and final pass weld is acceptable.
 - Full volumetric examination of the full penetration girth weld connecting the fitting to the connecting branch pipe is required.
 - In-Process exam is per ASME B31.3, para 344.7
- 3.2.2.3.6 Welded branch connection fittings either with or without added reinforcement that are not designed for volumetric examination may be used in specifically allowed applications in black cells and hard-to-reach areas where specified on the isometric or approved by Buyer's Engineering, provided they are full penetration groove welds and are radiographed. When a radiographic examination will not produce an interpretable radiograph, the weld shall be in-process examined per ASME B31.3, para 344.7 using liquid penetrant (PT) examination of the exterior of both the root pass and the final pass of the weld is acceptable.

- 3.2.2.3.7 The final pass of fillet welds used on socket welded branch fittings on outer jacket pipe drains in dual wall piping systems shall be fully visually (VT) and fully dye penetrant (PT) examined.
- 3.2.2.3.8 The fillet or full penetration welds attaching the end plate or cap closing the annulus between the outer jacket pipe and inner process pipe of dual containment piping spools shall be fully visual (VT) examined, and fully radiographic examined (RT) unless it will not produce an interpretable radiograph, in which case in-process examination per ASME B31.3, para 344.7 using liquid penetrant (PT) examination of the exterior of both the root pass and the final pass of the weld is acceptable.

3.2.2.4 **Non-BC and Non-HtR Weld NDE and Inspection Requirements**

The following are the NDE and inspection requirements for non-BC, and non-HtR piping welds lying outside of the BC and HtR boundaries. These requirements are summarized in Appendix A. The acceptance criteria are as listed in ASME B31.3, Table 341.3.2, for Normal Fluid Service Conditions with the following additions:

- 3.2.2.4.1 Where radiographic examination (RT) is allowed or specified for shop welds, the radiographic acceptance criteria for Normal Fluid Service apply, except that incomplete penetration shall not be permitted.
- 3.2.2.4.2 Where liquid penetrant examination (PT) or magnetic particle examination (MT) is allowed or specified, no cracks shall be permitted.
- 3.2.2.4.3 All shop girth welds require full visual examination in accordance with the requirements of ASME B31.3-1996, para 341.4.1(a), and NDE examination in accordance with the requirements of ASME B31.3-1996, para 341.4.1(b).
- 3.2.2.4.4 NDE requirements for shop performed joggle assembly and dual containment piping welds exceed Normal Fluid Service piping requirements in ASME B31.3-1996 and are stated in Appendix A
- 3.2.2.4.5 Individual dual containment pipe jacket girth welds requiring 5% random RT or UT may, on a case by case basis, be examined by in-process examination in accordance with ASME B31.3, para 344.7 with VT of the root pass in accordance with ASME B31.3, para 344.7.1(e). The Supplier shall submit the request for in process examination to the Buyer via a Supplier Deviation Disposition Request (SDDR) for review and permission to proceed prior to implementation.
- 3.2.2.4.6 Fillet welds including socket welds, integral support welds, and non pressure and non load bearing piping attachment welds (e.g., cathodic protection clips) welds require NDE in accordance with ASME B31.3, para 341.4.1.
- 3.2.2.4.7 Integrally reinforced forged branch fitting connection welds, welded to the main piping run shall be examined in accordance with the requirements of ASME B31.3, para 341.4.1. The girth weld that connects the fitting to the branch pipe run shall be examined in accordance with requirements of ASME B31.3, para 341.4.1.

3.2.3 **Pressure Testing**

- 3.2.3.1 Do not perform hydrostatic test on fabricated piping assemblies other than piping coated and wrapped in the Supplier's shop, and other spools when designated by approved documents.
- 3.2.3.2 Perform pressure test of coated piping in accordance with the applicable code prior to coating operations, unless the Buyer opts to leave joints uncoated for inspection during field hydrotest. Potable water shall be used for the pressure test performed by the Supplier. When pressure testing stainless steel piping, the test water shall not contain more than 200 ppm halogen. The Supplier shall submit a pressure testing procedure for Buyer's review and permission to proceed prior to performing the test. The Supplier shall also include a record of the test result as part of pipe spool documentation
- 3.2.3.3 Welding of integral supports shall be avoided in previously hydrostatically or pneumatically tested piping. Buyer Engineering shall be consulted immediately when this situation occurs.
- 3.2.3.4 After installation, all fabricated assemblies will be tested by others in accordance with the applicable code. Should any defect be detected during field testing, the defect will be repaired by the Buyer at Supplier's expense.

4 Configuration Management

Configuration management is maintained by fabrication and installation in accordance with approved drawings and procedures. Fabrication and installation shall be performed in accordance with approved documents. Where fabrication and installation cannot be accomplished in accordance with approved procedures and drawings, the Buyer shall be promptly notified via a SDDR or other suitable means. Fabrication and installation shall not proceed until a resolution is approved and proper documentation is provided.

5 Documentation and Submittals

Documentation is provided by approved procedures and drawings. Any records generated by working to procedures and drawings shall be submitted to the Buyer for logging and issuance. Refer to section 1.9 for submittal details.

Appendix A, Summary Table of Non-Destructive Examinations (NDE) of Pipe & Tubing Shop Welds

Table 2 Piping Weld Examination Requirements

SEE SECTIONS 2.1.4, 3.2.2.2, 3.2.2.3, 3.2.2.4 FOR APPLICABLE SHOP WELD NDE, INSPECTION, AND ACCEPTANCE CRITERIA REQUIREMENTS. 2. SEE NEXT SHEET FOR NDE LEGEND AND TABLE FOOTNOTES.

Type of Weld ↓	Piping Outside Black Cells and Hard-To-Reach areas ¹	Piping Inside Black Cells and Hard-To-Reach areas	Dual Containment (outside BC or HtR areas)	
			Inner Piping	Outer/Jacket Piping
All Girth and Miter Welds	100% VT 5% RT or 5% UT	100% VT 100% RT	100% VT 100% RT	100% VT 5% RT
All Longitudinal Seam Welds on Seamwelded Pipe and Fittings	See Note 2	100% RT or 100% UT ³	100% RT or 100% UT ³	N/A
Outer Pipe Shop Performed Longitudinal/Circumferential Welds for Dual Contained Piping	N/A	100% VT 100% RT	N/A	100% VT 5% RT
Double Encased Pipe Joggle Assemblies (shop welds on both inner and outer piping)	N/A	100% VT 100% RT	100% VT 100% RT	100% VT 100% RT
Sleeved Joggle Assemblies (shop welds on inner piping only)	N/A	100% VT 100% RT	100% VT 5% RT	N/A
All Pipe and Integral Attachment Fillet Shop Welds - including thermowell socket welds, integral support welds, non pressure & non load bearing piping attachment welds	100% VT	100% VT 100% PT or 100% MT	100% VT 100% PT or 100% MT	100% VT
All integrally reinforced forged branch fittings welded to main piping run. For BC/HtR piping, if 100% RT will not produce an interpretable radiograph, In-Process Examination and liquid penetrant examination of the exterior of both the root and final pass weld is acceptable. ⁴	100% VT	100% VT 100% RT	100% VT 100% PT or 100% MT	100% VT

For BC/HtR piping, welded branch connection fittings with or without added reinforcement welded to main piping run. ⁵ If 100% RT will not produce an interpretable radiograph, In-Process Examination and liquid penetrant examination of the exterior of both the root and final pass weld is acceptable.		100% VT 100% RT			
For BC/HtR piping, final pass of fillet weld on socket welded branch fitting to outer jacket pipe drains used in dual wall piping systems. ⁶		100% VT 100% PT			
For BC/HtR piping, fillet or full penetration welds attaching the end plate or cap closing the annulus between the outer jacket pipe and inner process pipe of dual containment piping spools shall be fully visual (VT) examined and fully radiographic examined (RT). ⁷ If 100% RT will not produce an interpretable radiograph, In-Process Examination and liquid penetrant examination of the exterior of both the root and final pass weld is acceptable.		100% VT 100% RT			

Legend: VT = Visual Examination per ASME B31.3 para 344.2
RT = Radiographic Examination per ASME B31.3 para 344.5
UT = Ultrasonic Examination per ASME B31.3 para 344.6
PT = Liquid Penetrant Examination per ASME B31.3 para 344.4
MT = Magnetic Particle Examination per ASME B31.3 para 344.3

¹ Includes embedded piping, but does not apply to dual containment piping, double encased joggles, or sleeved joggles. Those requirements are specified elsewhere in Table 2.

² Longitudinal seam welds in seam welded stainless steel, Hastelloy, AL-6XN, Inconel and titanium pipe and fittings that are not in black cell and hard-to-reach areas but are within the HLW and PTF shall be 100% volumetrically (UT or RT) examined. Based on service applications this requirement is not applicable to seam welded carbon steel pipe and fittings within the HLW and PTF.

³ Applies to longitudinal seam welds in all pipe and fittings, including all stainless, titanium, or nickel alloy, used in Black Cells or Hard-to-Reach areas, or for the inner pipe of dual containment piping.

⁴ The circumferential weld that connects an integrally reinforced forged branch fitting to the branch pipe run shall be examined as a girth weld.

⁵ This is applicable to specifically allowed applications in black cell and hard-to-reach areas listed in Section 3.2.2.3.6.

⁶ This is applicable to specifically allowed applications in black cell and hard-to-reach areas listed in Section 3.2.2.3.7.

⁷ This is applicable to specifically allowed applications in black cell and hard-to-reach areas listed in Section 3.2.2.3.8.



RIVER PROTECTION PROJECT – WASTE TREATMENT PLANT

ENGINEERING SPECIFICATION

FOR

Field Fabrication and Installation of Piping

Contents of this document are Dangerous Waste Permit affecting.

Content applicable to ALARA? ☒ Yes ☐ No

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8	10-6-09	<i>Clyde Nichols</i>	<i>J. Sutton</i>	<i>D. Jackson</i>	<i>R. Carlstrom</i>	<i>M. Cochrane</i>	<i>Cliff Winkler</i>
7	12/10/08	Clyde Nichols	J. Sutton	D. Jackson	R. Carlstrom	M. Cochrane	Cliff Winkler
6	2/27/07	D. Lytle	J. Sutton	K. Oldfather	D. Lord	Marty Ehlinger	J. Minichiello
5	2/28/06	D. Lytle	J. Sutton	K. Oldfather	D. Lord	Sven Akerman	J. Minichiello
4	4/4/05	B. Gavino	J. Sutton	K. Oldfather	N/A	G. Warner	J. Weetch for MM
3	12/08/04	B. Gavino	J. Sutton	K. Oldfather	N/A	G. Warner	W. Heine/MM
2	04/22/04	B. Gavino	J. Sutton	K. Oldfather	N/A	G. Warner	S. Skiles/MM
1	09/02/03	A. Trojan	B. Gavino	K. Oldfather	N/A	G. Warner	M. Myatt
0	06/12/02	B. Gavino	J. Weetch	M. Myatt	N/A	G. Warner	S. Foelber
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Revision History

Revision	Reason for Revision
8	<p>Incorporated the following by revision:</p> <ol style="list-style-type: none"> 1. BODCN 24590-WTP-BODCN-ENG-09-0007 (as accepted by DOE - ref CCN 193394 & 198448) - clarification of NDE requirements incorporated into Section 3.3, 3.8.2.2.4 and Appendix B. 2. SCN 24590-WTP-3PN-PS02-00082 - Section 3.8.2.2.1 is no longer required since Section 3.8.2.1 already states that NDE missed by material manufacturer or Supplier may be performed by Construction in accordance with the applicable non conformance disposition. 3. SCN 24590-WTP-3PN-PS02-00083 - revised Section 3.7.2.5 for locations of additional field welds. 4. SCN 24590-WTP-3PN-PS02-00085 - revised Section 3.7.3.4 to allow for installation of additional vent and drain valves. 5. SCN 24590-WTP-3PN-PS02-00087 - Added Section 3.2.6 6. FC 24590-WTP-FC-P-09-0086 - Section 3.5.4 - corrected Section reference. 7. PIER 24590-WTP-PIER-GT-09-0959-D - Section 3.5 added seam weld orientation requirements for DB (high pressure steam) isometrics. <p>Incorporated the following by reference: FC 24590-WTP-FC-P-09-0003 - see Section 1.6.11</p>
7	<p>Incorporated the following by revision:</p> <p>BODCN 24590-WTP-BODCN-ENG-08-0008 - clarification of NDE requirements listed in Section 3.8.3 (including the DOE comments as listed in letter 08-WTP-168 dated 9/25/08)</p> <p>SCN 24590-WTP-3PN-PS02-00080, SCN 24590-WTP-3PN-PS02-00072 (as revised), 24590-WTP-FC-P-06-0030, 24590-WTP-FC-P-07-0259, 24590-WTP-FC-P-07-0275, 24590-WTP-FC-P-08-0044 (as revised) (Retroactive) (i.e. 3.6.2.5 (2) the welds are not to be located where they come to rest on steel members.), 24590-WTP-FC-P-08-0192.</p> <p>Incorporated the following by reference: 24590-WTP-NCR-CON-05-0276, 24590-WTP-NCR-CON-05-0293, and 24590-WTP-NCR-CON-05-0296.</p> <p>Additional requirements added for welding and cleaning of titanium piping. New requirements added for field purchased pipe, piping alignment, field welding, and field NDE. Numerous wording changes to provide clarification to specific existing requirements. Clarified the NDE requirements for Black Cell and Hard-To-Reach areas. Provided definitions and locations of Black Cell and Hard-To-Reach areas. Other changes as agreed with PD, PD Chief Engineer, Construction Welding, E&NS, QA, Field Engineering, Field Q.C., and MET. Updated and clarified the Vacuum Box Leak Testing and Closure Welds requirements to be in accordance with the applicable SRD requirements and applicable code requirements related thereto Listed applicable Plumbing code. Added Appendix A to show examples of Black Cell and Hard To Reach piping weld boundaries. Added requirements for non-load bearing, non-pressure retaining piping attachments, and related welding and NDE requirements required to resolve Action 2 of PIER 24590-WTP-PIER-MGT-08-0099.</p>

24590-WTP-3PS-PS02-T0003, Rev 8
Field Fabrication and Installation of Piping

Revision	Reason for Revision
6	<p>Incorporated the following by revision: 24590-WTP-3PN-PS02-00058, -00065, -00067, -00069, -00070 24590-WTP-FC-P-06-0036, -FC-P-06-0178 24590-WTP-SDDR-PL-06-00016 Incorporated the following by reference 24590-WTP-FC-P-06-0032 24590-WTP-CDR-CON-05-0253 24590-WTP-NCR-CON-06-0088 Other changes as noted by revision bars are as agreed with PD and MET. The design changes to this specification continue to meet the SRD requirements and codes.</p>
5	<p>Incorporated the following by revision: 24590-WTP-3PN-PS02-00053, -00054, -00055, -00057, -00059 24590-WTP-FC-P-05-0080, -0089, -0090 and modified section number, 24590-WTP-FC-P-06-0005 Incorporated the following by reference 24590-WTP-FCR-P-05-0120 24590-WTP-FCR-P-05-0124 Other changes as noted by revision bars are as agreed with PD, MET, Construction, E&NS and QA. The design changes to this specification continue to meet the SRD requirements and codes.</p>
4	<p>Incorporated the following by revision: 24590-WTP-3PN-PS02-00039, -00040, -00042, -00046 24590-WTP-FCR-P-04-0124 24590-WTP-FCR-P-05-0034 All other changes as noted by revision bars are as agreed with Construction and E&NS</p>
3	<p>Incorporated the following by revision: 24590-WTP-3PN-PS02-00023, -00027, -00031, -00033, -00036 and -00038 24590-WTP-SDDR-PROC-04-00604 24590-WTP-FCR-P-04-0067 Incorporated the following by reference: 24590-WTP-CDR-CON-04-0099 24590-WTP-FCR-P-04-0067</p>
2	<p>Incorporated SCNs 24590-3PN-PS02-00013, -00016, -00019 and -00020; FCRs 24590-WTP-FCR-P-03-049, -065 and -075</p>
1	<p>Complete rewrite. Changes not noted in margins. Incorporated 24590-WTP-FCR-P-03-016, 24590-WTP-SDDR-PROC-03-0103, 24590-WTP-SDDR-PROC-03-0104, 24590-WTP-SDDR-PROC-03-0105, 24590-WTP-3PN-PS02-00002, 24590-WTP-3PN-PS02-00005, FCR 24590-WTP-FCR-P-03-041, and 24590-WTP-3PN-PS02-00009. Also incorporated 24590-WTP-3PN-PS02-00007, except as subsequently modified by EDR responses during review.</p>
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REV	DATE	BY	CHECK	REVIEW	E&NS	QA	APEM/DEM
SPECIFICATION No. 24590-WTP-3PS-PS02-T0003							Rev 8

Notice

Please note that source, special nuclear, and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the US Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. This document contained herein on radionuclides is provide for process description purposes only.

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1 General

1.1 Scope

This specification defines the requirements and the work necessary for Construction fabrication and installation of piping and engineered process tubing, Pipe Class S11H, systems in accordance with the requirements of the ASME B31.3 Code, "Process Piping", and other codes, standards, and documents referenced in this specification. This specification applies to all quality levels.

1.2 Work Included

- 1.2.1 Install all piping to ASME B31.3 Code, and other codes and standards, as applicable, including shop and Construction fabricated piping, flow elements, and expansion joints. This also includes offset piping assemblies (Joggles) that are either dual wall or single wall configurations.

The term "piping" as referenced throughout this document is intended to include tubing designed in accordance with ASME B31.3, unless specified otherwise.

The term "engineered process tubing" is defined as vessel sparger tubing routed to Ultrafilter Feed Vessel UFP-VSL-00002A/B; HLW LAG Storage Vessel HLP-VSL-00027A/27B; and HLW Blend Vessel HLP-VSL-00028.

- 1.2.2 Fabricate and install piping, including installation of all shop fabricated spools.
- 1.2.3 Install valves, steam traps, drain traps, strainers, and other line item specialties, as designated on the piping drawings.
- 1.2.4 Receive, handle, and store shop-fabricated piping; random lengths of pipe, valves, and fittings; and other specialty devices furnished by others.
- 1.2.5 Perform required welding, post weld heat treatment (PWHT), and nondestructive examinations (NDE).
- 1.2.6 Provide Construction erection labor and associated equipment.
- 1.2.7 Furnish all required bolting, fasteners, and gaskets for Construction fabricated piping.
- 1.2.8 Repair material and weld defects.
- 1.2.9 Apply coatings for Construction fabricated piping in accordance with approved procedures and specifications.
- 1.2.10 Fabricate and install engineered process tubing to ASME B31.3 and other applicable codes and standards.
- 1.2.11 Install welded pipe support attachments to piping.

- 1.2.12 Fabricate and install non-metallic piping systems to ASME B31.3 (example, Plastic, PVC, HDPE, fiberglass) which reference ASME B31.3 as the design code.

1.3 Related Work Not Included

- 1.3.1 Furnishing of shop-fabricated piping, as identified in the purchase order documents
- 1.3.2 Furnishing of valves, valve operators, specialty devices, expansion joints, instrumentation (including sensing devices), relief valves, orifice plates, flow elements, traps, and permanent strainers, unless otherwise noted on the design documents
- 1.3.3 Designing any piping
- 1.3.4 Designing any pipe supports
- 1.3.5 Installing instrument or sampling tubing and their associated supports (except in black cells and hard-to-reach areas)
- 1.3.6 Installing fire protection sprinkler piping
- 1.3.7 Installing plumbing piping provided and/or designed as part of Plumbing Subcontract scope.

1.4 Codes and Standards

For the codes and standards listed below, the specific revision or effective date identified, as well as the specific revision or effective date of codes and standards that they incorporate by reference (daughter codes and standards), shall be followed.

Any conflict between the requirements of this specification, design drawings, codes, and standards referenced in this specification and other design documents shall be brought to the attention of Engineering.

1.4.1 American Society of Mechanical Engineers (ASME)

B31.3 - 1996 - *Process Piping Code*

B31.3c - 1998 Addenda paragraph 345.2.3(c) - *Process Piping Code*

1.4.2 ASME Boiler and Pressure Vessel (BPV) Code

ASME BPV Code, Section V- *Nondestructive Examination***

ASME B & PV Code Section IX- *Welding and Brazing Qualifications***

** See 24590-WTP-MN-CON-01-001-01-01, *Welding Control Manual, Introduction and Instructions* (WCM) for the applicable edition used at WTP.

1.4.3 American Society for Testing and Materials (ASTM)

ASTM material and testing and specifications and standards as specified in the Piping Material Classes, design drawings, this specification, and other documents referenced herein.

1.4.4 American Welding Society (AWS)

AWS A5.32M-97 - *Specification for Welding Shielding Gases*

1.4.5 Pipe Fabrication Institute (PFI) Standards

ES-3 - 1994 - *Fabricating Tolerances*

ES-5 - 2002 - *Cleaning of Fabricated Piping*

1.4.6 Washington Administrative Codes (WAC)

WAC-173-303-640 (1/12/98) - *Dangerous Waste Regulation, Tank Systems*

1.4.7 International Association of Plumbing and Mechanical Officials (IAPMO)

Uniform Plumbing Code (UPC), 1997 Edition

1.4.8 American Concrete Institute (ACI)

ACI 318-99, *Building Code Requirements for Structural Concrete (ACI-99) and Commentary (ACI 318R-99)*

ACI 349-01, *Code Requirements for Nuclear Safety Related Concrete Structures*

1.5 Reference Documents/Drawings

1.5.1 24590-WTP-3PS-P000-T0001 - *Engineering Specification for Piping Material Classes General Description and Summary*

1.5.2 Piping Class Sheets

1.5.3 Piping Drawings

1.5.4 Pipeline Lists.

1.5.5 24590-WTP-3PS-G000-T0010 - *Engineering Specification for Positive Material Identification (PMI) for Construction*

1.5.6 24590-WTP-MN-CON-01-001-01-01 - *Welding Control Manual Introduction and Instructions -Job 24590 Only*

1.5.7 24590-WTP-3PS-NW00-T0002 - *Engineering Specification for Chemical Requirements for Materials Used in Contact With Austenitic Stainless Steel and Nickel Based Alloys*

- 1.5.8 24590-WTP-PW-P30T-00001 - *WTP End Prep Detail For Field Butt Welds*
- 1.5.9 24590-WTP-3PS-PB01-T0001 – *Engineering Specification for Technical Supply Conditions for Pipe, Fittings, and Flanges*
- 1.5.10 24590-WTP-3PS-AFPS-T0001 - *Engineering Specification for Shop Applied Special Protective Coatings for Steel Items and Equipment*
- 1.5.11 24590-WTP-3PS-G000-T0005 - *Engineering Specification for Cleanness Requirements for WTP Fluid Systems.*
- 1.5.12 24590-WTP-3PS-G000-T0011 - *Engineering Specification for Vacuum Box Leak Testing*
- 1.5.13 24590-WTP-3PS-PH01-T0002 - *Engineering Specification for Installation of Pipe Supports*
- 1.5.14 24590-WTP-GPP-CON-7112 - *Dangerous Waste Permit (DWP) Third Party Inspection Interface*
- 1.5.15 24590-WTP-3PS-M000-T0014 - *Engineering Specification for Labeling of Permanent Plant Components*
- 1.5.16 24590-WTP-J8-50-00001, *Radar Installation Wave Guide Spool Joining Details*
- 1.5.17 24590-QL-BOA-PB00-00004, *Stainless Steel Piping Bulks Miscellaneous*
- 1.5.18 24590-QL-BOB-PB00-00004, *Stainless Steel Piping Bulks Miscellaneous*
- 1.5.19 24590-WTP-3PS-M000-T0010, *Mechanical Installation Tolerances*
- 1.5.20 24590-WTP-3PS-F000-T0002, *Engineering Specification for Fastener Torque and Tensioning*
- 1.5.21 24590-WTP-3PS-PS02-T0001, *Engineering Specification for Shop Fabrication of Piping*

1.6 Design Documents Incorporated by Reference

- 1.6.1 24590-WTP-CDR-CON-04-0099 - Construction Deficiency Report
- 1.6.2 24590-WTP-FCR-P-04-0067 - Field Change Request
- 1.6.3 24590-WTP-FCR-P-05-0120 - Field Change Request
- 1.6.4 24590-WTP-FCR-P-05-0124 - Field Change Request
- 1.6.5 24590-WTP-FC-P-06-0032 - Field Change Request
- 1.6.6 24590-WTP-CDR-CON-05-0253 - Construction Deficiency Report

- 1.6.7 24590-WTP-NCR-CON-06-0088 - Nonconformance Report
- 1.6.8 24590-WTP-NCR-CON-05-0276 - Nonconformance Report
- 1.6.9 24590-WTP-NCR-CON-05-0293 - Nonconformance Report
- 1.6.10 24590-WTP-NCR-CON-05-0296 - Nonconformance Report
- 1.6.11 24590-WTP-FC-P-09-0003 - Field Change Request

1.7 Other

- 1.7.1 24590-WTP-DB-ENG-01-001, *Basis of Design*

2 Products

2.1 Materials

2.1.1 General Requirements

Piping materials shall be in accordance with the applicable Piping Material Classes (commonly referred to as Piping Class Sheets), the piping drawings, ASME B31.3, and other codes and standards, as applicable. Material substitutions listed below in Sections 2.1.1.1, 2.1.1.2, and in Section 3.7.7 are acceptable. Additionally the material substitutions (including the related requirements listed therein) listed in Specification 24590-WTP-3PS-PB01-T0001, *Engineering Specification for Technical Supply Conditions for Pipe, Fittings, and Flanges* are acceptable. Changes or substitutions beyond these require prior Engineering approval.

- 2.1.1.1 Flexible graphite gasket filler material is acceptable where non-asbestos filler is specified for spiral wound gaskets.
- 2.1.1.2 Individual line service class material will be identified on piping design drawings by indicating the appropriate piping class. Stock codes will generally be assigned for each item of Construction material.

2.1.2 Positive Material Identification (PMI)

PMI shall be performed as required by 24590-WTP-3PS-G000-T0010, *Positive Material Identification (PMI) for Construction*.

2.1.3 Material Traceability

Piping material traceability (such as identification of the item to applicable specification and grade of material, heat, batch, lot, part, or serial number or specified inspection, test, or other records) also includes transferring material identification mark(s) prior to subdividing material. This includes load bearing non-pressure retaining welded attachments such as pipe support stanchions or lugs.

Material test reports are required for all piping material installed under this specification.

- 2.1.3.1 Material traceability is required for all piping. When a pipe is to be cut, the material identification mark(s) shall be transferred to the pipe section not having the material identification mark(s), before cutting.
- 2.1.3.2 Material traceability is required for the integral pipe support attachments welded by Construction to the black cell, hard-to-reach, and other Q piping. For example, a stanchion is welded to a reinforcement pad welded to the process pipe - traceability is only required for the reinforcement pad. Construction shall assure that the welded support material is traceable to its material test report and heat number.

Non-welded pipe support attachments to the process piping do not require traceability.

- 2.1.3.3 Non-load bearing, non-pressure retaining welded attachments (e.g., cathodic protection clips, liner plate pipe collars) welded to non-black cell and non-hard-to-reach piping do not require material traceability beyond that listed in the attachment material Purchase Order technical specification requirements (i.e., CM material is acceptable), except that the material shall be the same P-group material as the piping material.
- 2.1.3.4 Traceability is not required for temporary welded attachments (e.g., rigging lugs) except the material shall be the same P-group material as the piping material.

2.2 Construction Requisitioned / Procured Piping, Gaskets, and Fasteners

- 2.2.1 Construction requisitioning or release of bulk stainless steel piping is restricted to the requirements of 24590-QL-BOA-PB00-00004 or 24590-QL-BOB-PB00-00004.
- 2.2.2 Construction requisitioning or release of bulk gaskets is restricted to the requirements of 24590-CD-BPO-PG00-00002.
- 2.2.3 Construction requisitioning or release of bulk fasteners is restricted to the requirements of 24590-QL-BPO-F000-00001.

3 Execution

3.1 Receiving, Handling, and Storage

3.1.1 General

The following is applicable to receiving, storing, and handling of shop-fabricated piping spools, and other piping materials.

3.1.2 Unloading

After unloading, visually inspect each item and pipe spool to verify the following:

- 3.1.2.1 Pipe openings and flanges are properly capped or taped, and all caps or tapes meet their intended function, including the following:
 - 3.1.2.1.1 Caps or tapes are in good condition, not ripped, torn, or damaged. See Section 3.1.3.3 for replacement requirements.
 - 3.1.2.1.2 Flange faces are adequately protected (e.g., with wood covering or similar) from physical damage and from corrosion.
 - 3.1.2.2 Each pipe spool is clearly marked with the identification number, and all loose materials shipped with the pipe spool are capable of being traced back to the spool to which they belong.
 - 3.1.2.3 The proper Engineering and Quality verification documentation required by the purchasing specification was received.
 - 3.1.2.4 Items are not damaged, broken, cracked, or deformed.

3.1.3 Protection Devices and Receipt Inspection

- 3.1.3.1 End caps, sealing tapes, or flange protectors shall not be removed as long as receiving inspection indicates that the sealed boundary has not been penetrated.
- 3.1.3.2 If, upon receipt, inspection reveals penetration of the sealed boundary, then internal inspection will proceed for that item only. If internal inspection reveals no deficiencies, the item shall be resealed for storage. If internal inspection reveals some deficiencies in cleanliness, the deficiencies shall be corrected before the item is resealed and placed in storage.
- 3.1.3.3 If replaced as a result of the above inspections, the caps and tape in contact with austenitic stainless steel or nickel base piping are to be in accordance and consistent with the requirements of 24590-WTP-3PS-NW00-T0002, *Engineering Specification for Chemical Requirements for Materials Used in Contact with Austenitic Stainless Steel and Nickel Based Alloys*.

3.1.4 Pipe Spools

Adhere to the requirements listed below when handling prefabricated piping spools, random lengths of pipe, and other piping materials.

- 3.1.4.1 Rough handling, bumping, dragging, or dropping pipe spools, pipes, and pipe components shall not be permitted.
- 3.1.4.2 Avoid surface damage to piping material and coatings.

3.1.5 Storage

Storage of pipe spools, random lengths of pipe, and piping components shall consider as a minimum, but not be limited to, the following:

- 3.1.5.1 Store austenitic stainless steel, nickel based alloy, titanium, and carbon steel pipe spools separately. However, this piping may be stored outdoors, off the ground, and out of contact with groundwater.
- 3.1.5.2 Other in line components, such as valves, shall be stored in accordance with respective Purchase Order requirements.

3.2 Installation of Piping

3.2.1 General

The installation of piping shall be in accordance with the piping drawings and specifications.

3.2.2 Clearances

Exercise extreme care when installing piping and provide sufficient clearance under and/or around hatchways, galleries, monorails, removable slabs, cable trays, and similar items. Also provide clearance for access, maintenance, operation, and inspection requirements. Project drawings showing the location of the above-mentioned items, along with routing of all pipe, large and small, shall be provided in order to locate piping. Where dimensional tolerances allow flexibility in pipe installation, the following shall serve as guidelines:

- 3.2.2.1 Give consideration to insulation thickness, as applicable, to ensure proper clearance.
- 3.2.2.2 The minimum vertical clearances between finished grade (or top of floor plate/platform) and the bottom of the piping, insulation, or support beam (whichever controls) are as follows in Table 1:

Table 1 Minimum Vertical Clearances from Finished Grade

Location	Minimum Clearance
Inside of buildings where component is located over walkways	8 Feet*
Elevated yard piping and/or pipe racks that are over roadways	15 Feet
Over railroad tracks	22 Feet

* 8 Feet clearance is required for equipment installation and removal volumes. Minimum clearance may be reduced to 7 feet 6 inches in some cases, provided an Engineering evaluation and approval is obtained prior to installation.

- 3.2.2.3 Piping should not be installed near the floor or in walkways or working spaces where it will constitute a hazard.
- 3.2.2.4 Clearance for a cable tray chase or stack should be 12 inches minimum above the top tray and 6 inches minimum below the bottom tray, with provision for a 24 inches

minimum clearance on at least one side of the cable chase or stack for personnel access.

- 3.2.2.5 Provide 2 inches minimum edge clearances (including allowances for flanges, valves, and insulation) between commodities, unless noted otherwise on the design drawing.

3.2.3 Valves

- 3.2.3.1 Install control valves in accordance with the piping isometrics, the applicable control valve data sheet, and the manufacturer's instructions.

- 3.2.3.2 Maintain adequate hand wheel clearances between adjacent valves.

3.2.4 Vents and Drains

- 3.2.4.1 Install piping for vents and drains at connections shown on the piping drawings.

- 3.2.4.2 Vents and drains shall be in accordance with Document 24590-WTP-3PB-P000-T0001, *Piping Assembly Details*, unless otherwise noted on the piping drawings.

3.2.5 Threaded Connections

- 3.2.5.1 Threaded connections are not allowed in black cells or hard-to-reach areas with the exception of DOE approved applications. These are as listed in Section 16 of 24590-WTP-DB-ENG-01-001, *Basis of Design*. These are also listed below in Section 3.3.

- 3.2.5.2 Lubricant - Huron Industries, Inc. Neolube No. 2 lubricant shall be used for threaded connections in radiation zones designated as R4, and R5. This lubricant may also be used in radiation zones designated as R1, R2, R3, and non-radiation zones.

- 3.2.5.3 Sealant - Team, Inc. PRI-101N, Team, Inc. PRI-102N, or Engineering approved equal, sealant shall be used for threaded connections in radiation zones designated as R4 and R5. These sealants may also be used in radiation zones designated as R1, R2, R3, and non-radiation zones.

- 3.2.5.4 Sealant - Hercules Real-Tuff sealant, or Engineering approved equal, shall only be used for threaded connections in radiation zones designated as R1, R2, and R3.

- 3.2.5.5 For non-radiation zones thread applications, thread lubricants Never-Seez Nickel Nuclear Grade (NGBT-16), Never-Seez High Temp Stainless (NSSBT-16), or Engineering approved equal may be used on threads and nut bearing surfaces.

- 3.2.5.6 All lubricants / sealants shall be installed in accordance with the manufacturer's instructions.

- 3.2.5.7 All lubricants / sealants shall be purchased as commercial material (CM) and may be used in CM and Q applications.

3.2.6 Embedded Pipe

Field fabricated embedded piping (other than those passing through engineered penetrations) shall be installed in accordance with the following requirements.

- 3.2.6.1 To ensure compliance with ACI 318-99 and ACI 349-01, embedded pipes, other than those passing through engineered penetrations, shall satisfy all of the requirements shown in sections 3.2.6.2, 3.2.6.3, and 3.2.6.4 unless approved by the CSA structural engineer. Applicable spacing requirements are as shown in Appendix C, Embedded Pipe Spacing (Other Than Those Passing Through Engineered Penetrations)
- 3.2.6.2 Pipes shall not be larger, in outside dimension, than 1/3 the overall thickness of the slab or wall.
- 3.2.6.3 Embedded pipes, to ensure compliance with ACI 318-99 and ACI 349-01 and concrete strength integrity, shall be spaced per the following:
 - 3.2.6.3.1 Parallel embedded pipes (adjacent not crossing) shall be placed so that the minimum space between pipes is equal to or greater than 3 diameters or widths on center of the largest pipe, but not less than 2" clear spacing between adjacent pipes unless approved by the CSA structural engineer. This spacing shall be maintained in the horizontal or vertical plane (see Figure 2, Parallel Pipes (Adjacent Not Crossing) Horizontal or Vertical Plane).
 - 3.2.6.3.2 Three parallel embedded pipes, properly spaced, may cross (crossing perpendicular within +/- 30 degrees) any quantity of other layers of pipe. Provide an additional spacing of 10 diameters or widths on center of the largest pipe between parallel groups of pipes when they cross other layers of pipes (See Figure 3, Perpendicular Pipes Crossing (+30 Degrees to -30 Degrees; Figure 4, Multiple Crossing of Pipes - Plan View; and Figure 5, Multiple Crossing of Pipes - Elevation View). Other configurations may be documented by Plant Design and approved by the CSA structural engineer.
- 3.2.6.4 Field routed pipes not shown on isometrics shall not be embedded without prior CSA engineering approval to evaluate compliance to ACI code requirements.
- 3.2.6.5 Field routed pipes not shown on isometrics shall not be embedded without prior E&NS approval to evaluate compliance for radiological shielding requirements for piping.

3.3 Black Cell and Hard to Reach Area Piping

The WTP design incorporates the "black cell" concept as a key part of the facility design of the Pretreatment (PT) and the High-Level Waste (HLW) facilities. This entails locating certain equipment in the shielded cells for which no maintenance or entry is planned for the 40-year design life of the plant. Black Cell (BC) Piping - all piping and tubing within a Black Cell up to the first weld outside the black cell.

There are areas of the WTP facilities that have components that are considered to be hard-to-reach (HTR) because of location and expected difficulty to perform repairs or maintenance which has the potential to impact mission life. HTR areas are designated as such based on R5 area radiation levels after removal of transient sources and decontamination and 1) piping and components cannot be manually or remotely maintained, and/or 2) piping and components are isolated physically by permanent plant equipment which cannot be manually or remotely removed. HTR piping extends out to the first accessible weld.

All-welded construction shall be used for piping and vessels. With the exception of socket welded thermowell nozzle connections, socket welded branch fittings on outer jacket pipe drains used in dual containment piping systems, and the threaded black cell liner spray nozzle connections, which will be tack welded or mechanically secured so that they will not back out, there shall be no flanged, socket welded or threaded connections in black cells or hard-to-reach areas. For black cell and hard-to-reach components there shall be no non-removable soft or non-metallic parts that could be affected by high radiation doses.

There are no valves in BC areas, and there are no inaccessible valves in hard-to-reach areas.

The term "Black Cell Weld" applies to any weld in a BC pipe or pipe spool.

The term "Hard-to Reach Weld" applies to any weld in a HTR pipe or pipe spool.

The following tables identify the rooms in the HLW and Pretreatment facilities that are classified as black cells or hard-to-reach:

Table 2 HLW Black Cell and Hard-to-Reach Areas

Hard-To-Reach Area/ Black Cells	Room Number	Room Name (Reference Only)
Hard-To-Reach (Components out of reach of crane and below filter deck)	H-0104	Filter Cave
Hard-To-Reach	H-0115	Shielded Pipeway
Hard-To-Reach	H-0121	Shielded Pipeway
Hard-To-Reach (Components out of reach of crane or below canister racks or weld table)	H-0136	Canister Handling Cave
Hard-To-Reach	H-0302	Active Services Cell - Melter No. 2
Hard-To-Reach	H-0308	Active Services Cell - Melter No. 1
Hard-To-Reach	H-B005A	Pour Tunnel No. 2
Hard-To-Reach	H-B015	Drum Transfer Tunnel
Hard-To-Reach	H-B032	Pour Tunnel No. 1
Hard-To-Reach	HCH14	Melter Cave No. 2 Vertical Pipe Chase
Hard-To-Reach	HCH15	Melter Cave No. 1 Vertical Pipe Chase
Black Cell	H-B005	SBS Drain Collection Cell No. 2
Black Cell	H-B014	Wet Process Cell
Black Cell	H-B021	SBS Drain Collection Cell No. 1

Table 3 Pretreatment Hard-to-Reach Areas

Hard-To-Reach Area	Room Number	Room Name (Reference Only)
Pits and Tunnels	P-B001	Inter Facility Transfer Line Tunnel
	P-B001A	Inter Facility Transfer Line Tunnel
	P-B002	HLW Drain Vessel Pit
	P-B003	Overflow Vessel Pit
	P-B004	Future LAW Transfer Line Tunnel
Piping out to Jumper Nozzles	P-0123	Hot Cell
Components Above the Crane	P-0123	Hot Cell
	P-0123A	Remote Decontamination Maintenance Cell
Out-of-reach of Crane and Below the Filter Deck	P-0335	Filter Cave
	P-0335A	Filter Cave Decontamination Chamber

Table 4 Pretreatment Black Cell Areas

Black Cells	Room Number	Room Name (Reference Only)
FRP (4 Pack)	P-0108	Feed Receipt Cell
	P-0108A	Feed Receipt Cell
	P-0108B	Feed Receipt Cell
	P-0108C	Feed Receipt Cell
FEP & UFP	P-0106	Feed Evaporator/Ultra-Filtration Cell
UFP, PWD & PVP	P-0104	Ultra-Filtration Cell
HLP & PJV	P-0102	HLW Storage Cell
HLP & PVP	P-0102A	HLW Receipt/Blending Cell
PWD	P-0109	Acidic/Alkaline Effluent Collection Cell
CXP & CNP	P-0111	Cs Ion Exchange Cell
RDP & CNP	P-0112	Resin Disposal/CNP Evaporated Process Cell
TXP	P-0113	Reserved Space (Technetium IX Feed Cell)
CXP	P-0114	Treated LAW Collection Cell
TLP	P-0117	Treated LAW Evaporator Cell
TLP & TCP	P-0117A	Treated LAW Concentrate Storage Cell

Appendix A, *Examples of Black Cell and Hard to Reach Piping*, shows various examples of the boundaries for BC and HTR spools and welds. This figure is from Section 16, of 24590-WTP-DB-ENG-01-001, *Basis of Design*.

Isometric drawings issued after 1 February 2008 identify the pipe spools that are to be installed in black cells (BC) or hard-to-reach (HTR) areas. The isometric drawing will identify each BC or HTR pipe spool with a spool tag which will include the spool ID number and the words "BLACK CELL" or "HARD-TO-REACH", as appropriate. Additionally, the respective isometric will have the words "CONTAINS BLACK CELL

(and / or "CONTAINS HARD-TO-REACH, as appropriate) PIPE" in large type located just above or beside the title block.

3.4 Welding

All Construction welding shall be in accordance with 24590-WTP-MN-CON-01-001-01-01, *Welding Control Manual, Introduction and Instructions* (WCM), and the additional requirements listed below. Review and approval of WCM documents shall be in accordance with 24590-WTP-MN-CON-01-001-01-01, *Welding Control Manual Introduction and Instructions*, Paragraph 9.0 - Required Review & Approval Matrix.

3.4.1 General Welding Requirements

- 3.4.1.1 Welding for field fabrication and installation shall be in accordance with ASME B31.3-1996.
- 3.4.1.2 All welding shall be protected from wind, rain, and other harmful weather conditions which may affect weld quality.
- 3.4.1.3 All surfaces to be welded shall be dry and substantially free of mill scale, oil, grease, dirt, paint (excluding weldable primer), galvanizing, and other contaminants. The welding of austenitic stainless steels or nickel based alloys to attachments which have been coated with galvanizing or zinc type paint, even after the coating or paint has been removed, is prohibited.
- 3.4.1.4 Weld bevel preparations for P-4 and higher alloys shall be machined or ground back to bright metal if they have been flame, arc, plasma, or laser cut.
- 3.4.1.5 Permanently installed backing rings or straps shall not be used on process piping. Prior approval from Engineering is required on other applications where backing rings are to be used.
- 3.4.1.6 The individual weld layer thickness for all processes shall not exceed 3/8 inch for materials less than 1-1/4 inch thick, or 1/2 inch for greater material thicknesses.
- 3.4.1.7 All weld joints for pressure retaining applications (excluding attachments) shall have a minimum of two passes, excluding autogenous welds, GTAW (manual or orbital) welds on piping or tubing with a nominal wall of 0.125" or less, and GTAW welded socket welds 1" NPS or less.

The minimum fillet weld leg dimension, for piping socket weld connections, shall be 1.25 times the nominal pipe wall, but no greater than the socket hub thickness. This applies to all applicable Piping Classes.
- 3.4.1.8 Peening shall not be used. The use of pneumatic tools or steel shot for slag removal is not considered peening.

- 3.4.1.9 Welding of stainless steel, nickel based, and titanium materials should be physically separated from carbon steel to ensure contamination by tools, grinding dust, etc., does not occur.
- 3.4.1.10 Prior to welding, shop applied coatings shall be removed, as required, a minimum of 2" from each side of the joint.
- 3.4.1.11 Load bearing, non-pressure retaining integral attachment (lug, stanchion, or wrapper plate) welds to piping shall be made to the rules of ASME B31.3, with the addition that the attachment material and the weld size shall be in accordance with the pipe support design drawing.
- 3.4.1.12 Where piping penetrates the liner plate, the liner plate-to-piping attachment weld shall be made to the rules of ASME B31.3, with the addition that the liner plate material shall be in accordance with the liner plate specification and the weld size shall be in accordance with the liner plate design drawing.
- 3.4.1.13 Other non-load bearing, non-pressure retaining integral attachments (e.g., cathodic protection lugs) to piping welds shall be made to the rules of ASME B31.3, with the addition that the attachment material shall be in accordance with the attachment specification and the weld size shall be in accordance with the attachment design drawing.
- 3.4.1.14 Welding of titanium shall be performed in an area isolated from all grinding, torch cutting, and painting.
- 3.4.1.15 Grinding or sanding wheels used on titanium shall contain no aluminum, (i.e. carbide-grit wheels are required).
- 3.4.1.16 Due to its pyrophoric nature, titanium dust from grinding operations shall be contained, and shall not be allowed to accumulate. The method for cleanup and disposition of titanium cutting and grinding fines shall be coordinated with the Environmental Field Representative/Waste Supervisor.
- 3.4.1.17 Gas backing is required when welding titanium.
- 3.4.1.18 Argon must be used for titanium shielding and purging gases and must meet the requirements of AWS A5.32, *Specification for Welding Shielding Gases*, Classification SG-A, with a minimum purity of 99.999% or engineering approved equal.
- 3.4.1.19 When welding titanium, separate gas supplies are needed for the following operations:
- Primary shielding of the molten weld puddle.
 - Secondary shielding to cool the recently-made weld deposit and associated heat-affected zones.
 - Backup shielding for the backside of the weld and associated heat-affected zones.

3.4.2 Welding Process Requirements and Limitations

The Construction welding process requirements and limitations shall be in accordance with 24590-WTP-MN-CON-01-001-07-01, *Welding and NDE MATRIX - Form 167*.

3.4.3 Welding Filler Materials

- 3.4.3.1 Austenitic stainless steel (A-No. 8) welding materials for pressure boundary and load bearing welds shall contain a minimum delta ferrite content of five percent. No ferrite testing required on welds.
- 3.4.3.2 Type 316L or 316LSi weld filler metal may be used for welding Type 304L stainless steel.

3.4.4 Preheat and Interpass Temperatures

- 3.4.4.1 Preheat and interpass temperatures shall be in accordance with the highest of that required by the applicable codes and Form 167, *Welding and NDE Matrix*, portion of the WCM, except that code recommended minimum preheat temperatures shall be mandatory. Preheat requirements shall apply to all welding, including tack welding and welding of temporary attachments.
- 3.4.4.2 The interpass temperature for austenitic stainless steels and nickel based alloys shall not exceed 350°F.
- 3.4.4.3 If oxy-fuel torches are used for preheating, the torch tip shall be appropriate for the work (i.e., a "rosebud," not a cutting or welding tip).
- 3.4.4.4 For titanium base metals, do not use oxy-fuel torches for preheating. Instead, use a small, hot-air blower (hair dryer-style) to warm the part slightly to ensure that no moisture has condensed on the surface to be welded.

3.4.5 Workmanship and Inspection

- 3.4.5.1 Each layer of welding shall be smooth and free of slag inclusions, porosity, excessive undercut, cracks and lack of fusion prior to beginning the next layer. In addition, the final weld layer shall be sufficiently free of coarse ripples, non-uniform bead patterns, high crown, and deep ridges to permit the performance of any required inspection. All arc strikes, starts, and stops shall be confined to the welding groove or shall be removed by grinding. Welds containing cracks shall be locally repaired or removed in accordance with the applicable requirements of the WCM.
- 3.4.5.2 Marking materials, temperature indicating crayons and liquid penetrant materials used on austenitic stainless steels and nickel based alloys shall not cause corrosive or other

harmful effects. See Specification 24590-WTP-3PS-NW00-T0002, *Engineering Specification for Chemical Requirements for Materials Used in Contact With Austenitic Stainless Steel and Nickel Based Alloys*.

- 3.4.5.3 Socket welds shall have an approximate gap of 1/16-inch between the bottom of the socket and the end of the pipe prior to welding.
- 3.4.5.4 Internal misalignment (high-low) in butt joints shall be as specified on the WCM.
- 3.4.5.5 When welding titanium, each bead and the adjacent metal shall be cleaned to remove all surface discoloration prior to deposition of the next bead.

Even though a clean, silver-colored weld is desirable, the final weld surface may have intermittent straw-colored oxides. Blue-colored weld surfaces are unacceptable.
- 3.4.5.6 Each weld shall be marked with the welder's unique symbol or number identification. The use of documentation that identifies the weld with the welder or welding operator is acceptable as an alternate method to marking each weld. Only low-stress stamps may be used on piping and piping components.

3.5 Field Fabrication

Field fabrication of piping shall be in accordance with the piping design drawings, the applicable Piping Material Class, and this specification.

Field fabrication of piping for Pipe Class C12B or C14A isometrics with DB (high pressure steam) in fluid code portion of the isometric drawing number shall have the longitudinal seam weld of horizontal piping runs oriented in the 12 o'clock "up" position.

3.5.1 Branch Connections

Branch connections shall be in accordance with applicable Piping Material Class unless otherwise shown on the design drawings.

3.5.2 Thermowells

Install thermowells in accordance with the applicable design documents.

3.5.3 Field Weld Joint Preparation

Unless otherwise noted on the design drawings, field butt weld end preparations shall be in accordance with 24590-WTP-PW-P30T-00001, *WTP End Prep Detail for Field Butt Welds*.

3.5.4 Dimensional Tolerances

Unless otherwise shown on the design drawings, do not exceed dimensional tolerances of fabricated piping assemblies specified in PFI ES-3, *Fabricating Tolerances*. For pipe slope tolerances, see section 3.7.5.5.

3.5.5 Temporary Attachments

For criteria associated with temporary attachments, see 24590-WTP-3PS-PH01-T0002, *Engineering Specification for Installation of Pipe Supports*.

3.5.6 Painting and Preservation

For bulk materials purchased and installed by Construction, the external surface coating requirements for carbon steel materials are as listed in 24590-WTP-3PS-AFPS-T0001, *Engineering Specification for Shop Applied Special Protective Coatings for Steel Items and Equipment*, Appendix D, Item 3.30, 3.70, or 3.80.

3.6 Cleaning of Construction-Fabricated Piping

3.6.1 General

- 3.6.1.1 Wire brushing or grinding of stainless steel or nickel based alloy material shall be performed only with stainless steel brushes or tools not previously used in contact with other non-stainless steel or non-nickel based alloy material.
- 3.6.1.2 Stainless steel wire brushes that have not been used on other materials shall be used to clean titanium.
- 3.6.1.3 Solvent cleaning may be used to remove grease, oil, or other foreign matter. Non-halogen solvents are recommended. Cleaning solvents used in cleaning stainless steel and nickel based alloy materials shall contain a maximum chloride content of 200 ppm and a maximum sulfur content of 400 ppm. Cleaning solvents used for cleaning titanium materials are methyl alcohol, acetone, or other chlorine-free solvents.
- 3.6.1.4 Mechanically clean Construction fabricated carbon steel piping as necessary to remove loose foreign material, such as scale, sand, weld spatter particles, cutting chips, and similar items from the inside of the piping by any suitable means, such as a mechanically driven rotary cleaning tool, wire brush, or air blow. Air used to perform air blows shall be clean, filtered, and oil-free.
- 3.6.1.5 Flush water quality shall meet the same requirements as water used for pressure testing, specified in Section 3.8.4.
- 3.6.1.6 External rust staining of austenitic stainless steel and nickel based alloys due to contact with carbon steel is acceptable.

- 3.6.1.7 Titanium weld preparation includes removing any oil, grease, dirt, or grinding dust from surfaces to be joined. Steam cleaning, or an alkali dip in a dilute solution of sodium hydroxide, can remove most of these contaminants. To remove the last remaining organic compounds just before welding, use a lint-free glove and methyl alcohol, acetone, or other chlorine-free solvent. Caution - Most of these solvents have a low flash point, be sure they have fully evaporated before striking an arc.

3.7 Installation Requirements

3.7.1 General

The piping, valves, and other specialty items shall be installed as shown on the design drawings and the following installation requirements.

3.7.2 Piping

- 3.7.2.1 The Shop Fabricator (Supplier) cleans the pipe spools in accordance with applicable requirements listed in 24590-WTP-3PS-PS02-T0001, *Engineering Specification for Shop Fabrication of Piping*. Construction shall clean the pipe spools in accordance with the applicable requirements listed in 24590-WTP-3PS-G000-T0005, *Engineering Specification for Cleanliness Requirements for WTP Fluid Systems*, for Q piping and 24590-WTP-3PS-PS02-T0001, *Engineering Specification for Shop Fabrication of Piping*, for CM piping.

Prior to installation, visually check all piping for cleanliness. Remove all loose rust, mill scale, dirt or foreign matter as well as grease, oil, flux, weld spatter, and other contaminants. Air-flush the piping using clean, dry, oil-free air, if necessary.

In general, the following conditions are acceptable for piping:

- Rust films on both corrosion-resistant alloys and carbon and low alloy steel surfaces
 - Tightly adherent mill scale on non machined carbon and low alloy steel surfaces that resist removal by hand scrubbing with a stiff metal brush
 - Paint and preservative coatings on carbon or low alloy steel surfaces that will not peel or flake when subjected to cold water flushing
- 3.7.2.2 During installation of piping and equipment, cover openings for pipe connections, access openings, and open-ended pipes whenever work is not in progress. Temporary covers made of plywood or sheet metal may be used to cover manholes and flanged connections.
- 3.7.2.3 Note: In order to prevent surface damage, proper care in handling and installation of all piping should be exercised at all times.

Defects or imperfections not exceeding 12-1/2 percent of the specified nominal wall thickness, such as scratches, gouges and pits caused by mechanical operations,

handling, arc strikes, or weld spatter, shall be removed and the area blended smooth with at least a 3:1 transition into the surrounding material.

Weld repair for surface defects, or reworked areas, exceeding 12-1/2 percent of the specified nominal wall in depth, shall be performed in accordance with approved welding procedures in the Form 167 portion of 24590-WTP-MN-CON-01-001-01-01, *Welding Control Manual, Introduction and Instructions* (WCM). Completed weld repairs shall be examined to assure compliance with code and Project requirements. All weld repairs shall be recorded on appropriate welding documentation. Wall thickness after repair shall be no less than 87-1/2 percent of the specified nominal wall.

- 3.7.2.4 The length of short pieces of pipe that are used to facilitate pipe-to-pipe fit-up, replace damaged, or defective piping, should not be less than one nominal pipe diameter, or 6 inches, whichever is greater.

The location of the additional field weld shall be in accordance with Section 3.7.2.5.

- 3.7.2.5 The initial field weld locations are shown on the piping isometric drawings. Field conditions may require more or fewer welds as necessary to accommodate proper installation. The following criteria must be met for added field welds:

- 1) The overall dimensional configuration must be met according to the issued documents;
- 2) Socket welded couplings may be added only to socket welded piping systems provided the criteria in this section and Section 3.3 are met;
- 3) Addition of butt welds is preferred over the addition of socket welds, even in a socket welded system;
- 4) The welds or couplings are not to be located where they come to rest on steel members.
- 5) The minimum required edge distance (D) between an added field weld and existing shop weld is as listed in Table 5 Minimum Required Edge Distance Between Field and Shop Welds.

- 3.7.2.6 Configuration of installed piping shall be confirmed by visual comparison of the installed piping components to the approved drawing. Configuration of field-fabricated components shall be verified to the approved drawing.

- 3.7.2.7 Location of fabricated piping components is not required to be verified or confirmed by Construction provided the configuration is found to be acceptable.

Table 5 Minimum Required Edge Distance Between Field and Shop Welds

Nominal Pipe Size (inches)	D (inches)
3" and under	1

3.5" to 6"	1 5/8
8" to 12"	2 3/4
14" to 18"	3 7/8
20" to 24"	5 1/8

- 3.7.2.8 Construction verification of dimensional, material, and location information shown on piping isometrics that relate to shop fabricated piping components is not required.
- 3.7.2.9 The use of Lok-Rings is acceptable for the installation, rework, or repair of radar guide tubes outside of black cells and hard-to-reach areas. This application is only for radar guide tubes located in the LAW and LAB facilities and where the existing design allows for the application of Lok-Rings. In addition, the installation of Lok-Rings shall also be in accordance with 24590-WTP-J8-50-00001, *Radar Installation Wave Guide Spool Joining Detail*.

3.7.3 Valves and Specialty Items

- 3.7.3.1 Install all specialty items, including expansion joints, strainers, filters, etc., in accordance with the manufacturer's recommended instructions and design drawings.
- 3.7.3.2 Install startup strainers as shown on the design and installation drawings. Permanent ring spacers to replace startup strainers shall conform to the applicable piping class sheet.
- 3.7.3.3 All valves and inline components that are assigned a permanent plant identification number shall be labeled in accordance with 24590-WTP-3PS-M000-T0014 - *Engineering Specification for Labeling of Permanent Plant Components* at time of turnover. Prior to turnover to Startup and Commissioning, identification tags supplied by the Vendor or temporary identification tags supplied by Construction Piping Field Engineering are acceptable.
- 3.7.3.4 Install valves and other specialty items not mentioned above, such as steam traps, drain traps, and flexible hose assemblies, as shown on the design drawings, and use manufacturer's drawings, installation manuals, or instructions. Thread lubricants and/or sealants used are as listed in above Section 3.2.5.

High point vent and low point drain valves may be added as required to accommodate hydro testing. These additional vents and drains are not allowed to be added in PTF and HLW Hard-to-Reach or black cell areas. These additional vents and drains are to be added in accordance with the applicable requirements in 24590-WTP-3PB-P000-T0001, *Piping Assembly Details*, and the associated material requirements listed in 24590-WTP-3PS-P000-T0001, *Engineering Specification for Piping Material Classes General Description and Summary*.

- 3.7.3.5 Before conducting any welding on diaphragm valves or other soft seated valves, the bonnet assembly and diaphragm and any other heat sensitive components shall be removed and the valve body cooled, if required by manufacturer's instructions. Particularly for stainless steel valves, care shall be exercised to ensure that contact with cooling medium (e.g., water-soaked wick) is not harmful. Water used for cooling of austenitic stainless steel and nickel based alloy valves shall contain a maximum chloride content of not greater than 200 ppm.
- 3.7.3.6 To prevent damage or distortion to the valve seat and disc, follow the manufacturer's instructions with respect to position of the valve stem and the disc during installation and welding.
- 3.7.3.7 Relief and safety valve settings shall not be modified in any way.
- 3.7.3.8 Manual gate, globe, and check valves shall be disassembled and reassembled, if required, in accordance with the manufacturer's disassembly and reassembly procedures.
- 3.7.3.9 If disassembly beyond the manufacturer's standard installation instruction is required, valves and actuators shall be disassembled and reassembled only after documented concurrence has been obtained from Engineering that doing so will not compromise the warranty and performance of the valve.
- 3.7.3.10 Valves shall be handled and supported with care to preclude damage to handwheels, motor operators, appurtenances, flanges, and weld ends. Lifting lugs should be used whenever they are provided on a valve. In no case shall a valve be picked up by the operator.
- 3.7.3.11 Control valve orientation shall be in accordance with the applicable control valve data sheet, the manufacturer's instructions, and the design drawing.
- 3.7.3.12 Appropriate manufacturer's precautions shall be taken to protect tubing, gauges, positioners, and similar items on control valves or other pneumatically operated devices.
- 3.7.3.13 Remote operators (extension bars, floor stands, etc.) shall be installed as shown on the design drawings.
- 3.7.3.14 Ensure that directional in-line components (e.g. check valves) are installed correctly to permit the intended direction of flow as shown on the isometric drawing.
- 3.7.3.15 **Flanged Connections**
- 3.7.3.16 Remove any rust preventive coatings from the gasket-seating surface of the flange faces.
- 3.7.3.17 Install flanged joints using bolting and gasket materials as specified on the design installation drawings and 2.1.1.1 of this specification. Bolt lengths and stock code

numbers listed on the design installation drawings may be replaced by the field provided the bolt is of the same material, same specification, and same quality level as specified on the design installation drawings. Bolt holes shall be aligned and the flanges shall be brought to bear uniformly on the gaskets when bolted. Bolt holes shall straddle centerlines unless otherwise specified on the design drawings. At least one full thread shall be showing after tightening the nuts.

- 3.7.3.18 Install insulating flange kits (using non-conductive gasket material compatible with the service) where shown on the design drawings.
- 3.7.3.19 Flanged joints shall be assembled in accordance with ASME B31.3 - 1996, paragraph 335.2. For Q and CM piping installations, all flanges utilizing spiral wound metallic gaskets shall have the fasteners tightened in accordance with the requirements of Section 4.3.1 of 24590-WTP-3PS-F000-T0002, *Engineering Specification for Fastener Torque and Tensioning*.
- 3.7.3.20 For Q and CM piping installations, flanges utilizing bonded fiber type or rubber gaskets shall have all fasteners tightened "tool tight" per Section 4.3.3 of 24590-WTP-3PS-F000-T0002. Thread lubricants used are as listed in above Section 3.2.5.
- 3.7.3.21 Install and align flanges to rotating equipment (e.g. pumps) in accordance with 24590-WTP-3PS-M000-T0010, *Mechanical Equipment Installation Tolerances*, or the manufacturer's requirements, whichever is less.

3.7.4 **Embedded and Underground Waste Transfer Piping**

- 3.7.4.1 Before any completed piping is embedded in concrete, or controlled density fill (CDF), perform a leak test. Gravity drainage systems are tested per requirements of requirements of Section 3.8.3.7. Minimum test pressure shall be based on the design pressure given in the Pipeline List.

Exception: Piping need not be leak tested before embedment when there are no welds, welded attachments, or mechanical joints associated with the spool pieces being installed.

- 3.7.4.2 Install piping embedded in concrete, or CDF as shown on the design drawing. Any defect evidenced by pressure testing shall be repaired and the piping shall be successfully retested before it is embedded.
- 3.7.4.3 Underground waste transfer piping shall be coated, if applicable, in accordance with the requirements shown on design drawing before pressure testing. However, joints shall be exposed for the testing. The coating of the field weld areas, after successful completion of the pressure testing, shall meet the requirements shown on the design documents.

3.7.5 **Installation Tolerances**

Unless specifically required by the design drawings:

- 3.7.5.1 The following position tolerances are acceptable for piping systems for all services:
 - 3.7.5.1.1 All piping 1/2-inch NPS and larger in size (except safety valve open vent stacks) shall be installed within 2 inches of design.
 - 3.7.5.1.2 The erected position of an open-inlet safety valve (or pressure relief valve) vent stack shall be established with respect to the as-built position of the valve discharge tail pipe. The erected annular position and penetration of the tail pipe within the vent stack entrance shall not vary more than 1/4 inch from the designed cold offset position. The entry end of a vent stack shall not be modified to compensate for relative position error.
- 3.7.5.2 Valves and other in-line piping components, except flow elements and metal bellows expansion joints (which are both installed in accordance with the Supplier installation instructions), may vary from design position within the following tolerances, unless specifically required by the design drawing:
 - 3.7.5.2.1 The position in elevation or in horizontal location may vary, as dictated by the allowable variations for the piping in which the component is installed.
 - 3.7.5.2.2 Where position is specified, the horizontal orientation of a component about the centerline of a vertical pipe leg may vary ± 10 degrees.
 - 3.7.5.2.3 Where position is specified, the orientation of a component about the centerline of a horizontal pipe leg may vary ± 10 degrees, except where a specified valve stem position is horizontal; in such case, a valve stem position may vary by only $+10$ degrees.
- 3.7.5.3 Position tolerances of metal bellows expansion joints may have unique requirements established by the manufacturer. In the absence of these, the following limits apply:
 - 3.7.5.3.1 In no case may the design-installed length or configuration of an expansion joint assembly be altered or modified to overcome a piping misfit, except where specific design considerations have been provided.
 - 3.7.5.3.2 The position in elevation or horizontal location of an expansion joint assembly may vary, as dictated by the allowable variations for the piping in which it is installed, within the manufacturer's limitations for the expansion joint.
 - 3.7.5.3.3 Expansion joint assemblies that are completely symmetrical about a centerline axis, with no lateral connections or bottom drain point, may be erected with any orientation about their axis, provided the joint assembly does not incorporate the use of hinged restraint hardware. Gimbal joints may be rotated about the centerline axis.
 - 3.7.5.3.4 A hinged expansion joint assembly must be installed for angulation in a specific direction. The design orientation of the assembly hinge pins shall be verified and the installation achieved shall be within a rotational variation of 1/2 degree.

3.7.5.4 The erected position tolerances permitted for all piping systems shall be qualified or limited by the following considerations:

3.7.5.4.1 Where piping segments must accommodate thermal expansion and the designed clearance between adjacent pipes or structures is 6 inches or less (as measured to the outside diameter, including insulation), the design clearance and tolerance must be maintained, and the 2 inches installation tolerance shall not apply.

3.7.5.4.2 When parallel piping runs are erected in a ganged position with design clearances of 6 inches or less (as measured to the outside diameter, including insulation), the design clearance shall be maintained, and the 2 inches installation tolerance shall not apply.

3.7.5.4.3 When position variations and effect of the variations on the location of high point vents and low point drains occur, the specified slope requirements for drainage shall be maintained as a minimum design requirement for a piping system as shown on the design drawing.

3.7.5.4.4 Variations within tolerance, which may impair service, access, or operability of piping system components or in-line instrumentation, should be presented to Engineering.

3.7.5.5 **Pipe Slope**

The following are general pipe slope requirements, allowed deviations, definitions applicable to field fabrication, installation of piping, and pipe slope verification requirements.

3.7.5.5.1 For lines where no slope is shown on the governing isometric drawing, there shall be no puddling, ponding, or pocketing in lines containing dangerous waste material (DWP lines).

3.7.5.5.2 Black cell and hard-to-reach piping shall be routed as "Self Draining" and "Do Not Pocket" where no slope is indicated, except as noted below in deviations from pipe slope.

3.7.5.5.3 Non-black cell or non-hard-to-reach piping shall be free draining, unless otherwise noted.

3.7.5.5.4 **Deviations from Pipe Slope.**

3.7.5.5.4.1 Short sections of a self-draining line that requires a slope between vertical segments (10% or less of the pipe run), may be less than the specified slope. This does not apply to underground waste transfer lines between facilities or coaxial piping.

3.7.5.5.4.2 Piping connections to tanks, vessels, equipment, cabinets, bulges, and jumpers may be horizontal, prior to the connection as required, to facilitate connecting the

piping to the component nozzle. The required piping slope should be achieved as soon as practical at the connection and within five pipe diameters or 2 feet, whichever is greater.

- 3.7.5.5.4.3 Valves, fittings and other miscellaneous inline components are exempt from sloping requirements unless specifically noted on design documents.

3.7.5.5.5 Definitions

- 3.7.5.5.5.1 “Puddling or ponding” is defined as any horizontal pipe run where a dip or depression in the horizontal pipe run results in the bottom inside diameter of the pipe being lower than the upstream or downstream segments of the pipe (example: pipe sag).

- 3.7.5.5.5.2 Pocketing “is defined as any change to a horizontal pipe run that creates a low point without provisions for adequate draining. Adequate draining may be self draining or be a low point drain.

- 3.7.5.5.5.3 “Self-Draining” is defined as having a continuous slope or having horizontal lines without intermediate low points or pockets.

- 3.7.5.5.5.4 “Free Draining” is defined as having low point drains were necessary to drain the line.

3.7.5.5.6 Installation Tolerances

- 3.7.5.5.6.1 Slope deviations are not permitted for underground waste transfer lines or coaxial piping without an approved FC from Engineering.

- 3.7.5.5.6.2 Where slopes greater than or equal to 1:100 are identified on an isometric or piping design drawing, the slope shall be maintained with no more than -10% deviation in the direction shown, except that slope greater than that specified on the drawing is acceptable.

Example:

If the isometric or piping design drawing specifies a slope of 1:100, then the field installed slope cannot be less than 1:110 slope, but is allowed to have greater slope than 1:100.

- 3.7.5.5.6.3 Where slopes less than or equal to 1:100 are identified on an isometric or piping design drawing, the measured slope shall be maintained greater than 0” in the direction shown (including instrument accuracy allowance).

- Elimination of “puddling or ponding” is not an inspection requirement in these instances.
- Minimal puddling or ponding is acceptable for lines that don’t contain radioactive material or dangerous waste material.

3.7.5.5.7 Slope Verification

Construction shall verify that the pipe slopes in the direction indicated on isometric or piping design drawings using the following measurement intervals:

- Slope measurements shall be taken at a minimum of one location between each change in direction.
- For straight runs exceeding 20 feet in length, slope measurements shall be taken near or adjacent to the fitting, bend, in-line component, or termination point. This will insure overall fall was maintained as specified on the associated drawings.

Pipe slope conversions are as listed below in Table 6, Pipe Slope Conversions.

Table 6 Pipe Slope Conversions

Slope	Equivalent inches/foot
1:400	1/32
1:300	3/64
1:200	1/16
1:100	1/8
1:50	1/4
*For slopes not shown, equivalents may be interpolated to the next higher 1/32"	

3.7.6 Piping Alignment

3.7.6.1 Construction shall consult Engineering for pipe stress and/or non-rotating equipment (e.g. tank) nozzle load evaluation when the following welded and flanged joint gap and alignment criteria are exceeded:

- Ability to close an axial gap not exceeding 1/4" by non-mechanical means.
- With both ends of the pipe in an at rest condition, the maximum distance between pipe centerlines to perform welding or flange alignment by a non-mechanical means shall be:
 - 2" maximum for pipe NPS 2 or less
 - 1" maximum for NPS 2-1/2 to NPS 6
 - 1/2" maximum for NPS 8 and larger

Gap is defined as the face-to-face distance (same plane) of the two pipes to be joined.

Alignment is defined as the distance between the centerlines of the two pipes to be joined, or the pipe to non-rotating equipment nozzle connection.

Flange alignment criteria for rotating equipment connections are as discussed above in Section 3.7.3.21.

- 3.7.6.2 Cold springing or pulling is prohibited if it exceeds the gaps and alignment criteria listed above in Section 3.7.6.1.
- 3.7.6.3 Before bolting up, parallel alignment of flange faces shall not deviate from the indicated position measured across any diameter more than 1/32 in./ft or 1/32 in., which ever is greater, and flange bolts shall be aligned within 1/8 in. maximum offset.

3.7.7 Material Exchange

Construction shall control the material exchange ensuring that the level of traceability and compatibility required by the drawings and specifications is maintained. Spool numbers provided for the design location shall be maintained on the piping through installation acceptance.

Piping material from excess shop fabricated spools and/or bulk piping may be used to replace an entire spool or any part of the spool provided compatibility is confirmed by matching the material stock codes (material types, sizes, schedules, ratings), quality levels, and Piping Material Classes specified by the current isometrics or piping drawings. This would also include verification of PMI of material and shop welds, and shop weld NDE requirements.

Construction may upgrade material that is found lacking, within the requirements specified, provided the upgrade details are documented. Permission to upgrade material does not extend to the use of this upgraded material, or Deleted Reusable Material (DRM) material, in BC or HTR areas.

BC or HTR spools slated for DRM, without required certification (MTR or C of C), or spools otherwise found non compliant or not feasible to Rework, are dispositioned per the NCR or CDR process as "Reject". Rejected BC or HTR spools shall not be reused at WTP.

Prior Engineering approval is required for any piping material exchanges that do not comply with the above criteria and that listed above in Section 2.1.1.

3.8 Examination, Inspection, and Testing

3.8.1 General

All examination, inspection, and testing shall be in accordance with this specification and other governing codes and standards, as applicable.

3.8.2 Examination of Field Welds

- 3.8.2.1 Examine all completed pressure boundary welds in accordance with the applicable Engineering requirements herein and with the governing code. Procedures and acceptance standards shall be in accordance with the governing code. Weld repair shall be examined according to the requirements applied to the original weld.

NDE required by an ASTM material specification that was not performed by the material manufacturer or the pipe spool Supplier may be performed by Construction in accordance with the applicable non-conformance disposition.

3.8.2.2 BC and HTR Weld NDE and Inspection Requirements

Requirements of this section are retroactive to all previously installed materials, inspections, and installations covered by this section.

The NDE and inspection requirements for the BC and HTR welds, which are in excess of ASME B31.3-1996, are provided in Table 7 in Appendix B. The acceptance criteria are as listed in ASME B31.3, Table 341.3.2, for Normal Fluid Service Conditions.

Where radiographic examination (RT) is allowed or specified for field performed welds, the radiographic acceptance criteria for Normal Fluid Service applies, except that incomplete penetration and internal undercut shall not be permitted.

Where ultrasonic examination (UT) is allowed or specified for field performed welds, UT techniques shall be performed with automated devices. Use of manual or semi-automated scanning devices shall be subject to the evaluation and approval of a Bechtel UT Level III. UT acceptance criteria shall be in accordance with the following. Imperfections which produce a response greater than 20% of the reference level shall be investigated to the extent that the operator can determine the shape, identity, and the location of all such imperfections and evaluate them in terms of the acceptance standards given in (A) and (B) following:

- (A) Indications characterized as cracks, lack of fusion, or incomplete penetration is unacceptable regardless of length.
- (B) Other imperfections are unacceptable if the indication exceeds the reference level amplitude and has lengths which exceed:
 - $\frac{1}{4}$ inch for t up to $\frac{3}{4}$ inch
 - $(\frac{1}{3}) t$ for t from $\frac{3}{4}$ inch to $2 \frac{1}{4}$ inch("t" is the thickness of the weld or thinner of the two materials being joined)

Where liquid penetrant examination (PT) or magnetic particle examination (MT) is allowed or specified, no cracks shall be permitted.

3.8.2.2.1 DELETED.

3.8.2.2.2 Joggle assemblies (piping designed to ASME 31.3 code) passing through or penetrating into BC or HTR areas are to be treated by the field as Black Cell or Hard-to-Reach piping, respectively, and require the same NDE as required for any other Black Cell or Hard-to-Reach piping.

3.8.2.2.3 DELETED.

- 3.8.2.2.4 The fillet or full penetration welds attaching the end plate or cap closing the annulus between the outer jacket pipe and inner process pipe of dual containment piping spools shall be fully visual (VT) examined, and fully radiographic examined (RT) unless it will not produce an interpretable radiograph, in which case in-process examination per ASME B31.3, para 344.7 using liquid penetrant (PT) examination of the exterior of both the root pass and the final pass of the weld is acceptable.

3.8.2.3 Non-BC and Non-HTR Weld NDE and Inspection Requirements

The NDE and inspection requirements for non-BC and non-HTR piping welds lying outside of the BC and HTR boundaries, which are in excess of ASME B31.3-1996, are provided in Table 7 of Appendix B. The acceptance criteria are as listed in ASME B31.3, Table 341.3.2, for Normal Fluid Service Conditions. These requirements also apply to all embedded piping not protruding into a BC or HtR area.

Where radiographic examination (RT) is allowed or specified for field performed welds, the radiographic acceptance criteria for Normal Fluid Service applies, except that incomplete penetration shall not be permitted.

Where ultrasonic examination (UT) is allowed or specified for field performed welds, UT techniques shall be performed with automated devices. Use of manual or semi-automated scanning devices shall be subject to the evaluation and approval of a Bechtel UT Level III. UT acceptance criteria shall be in accordance with the following. Imperfections which produce a response greater than 20% of the reference level shall be investigated to the extent that the operator can determine the shape, identity, and the location of all such imperfections and evaluate them in terms of the acceptance standards given in (A) and (B) following:

- (A) Indications characterized as cracks, lack of fusion, or incomplete penetration is unacceptable regardless of length.
- (B) Other imperfections are unacceptable if the indication exceeds the reference level amplitude and has lengths which exceed:
 - $\frac{1}{4}$ inch for t up to $\frac{3}{4}$ inch
 - $(\frac{1}{3}) t$ for t from $\frac{3}{4}$ inch to $2 \frac{1}{4}$ inch("t" is the thickness of the weld or thinner of the two materials being joined)

Where liquid penetrant examination (PT) or magnetic particle examination (MT) is allowed or specified, no cracks shall be permitted.

- 3.8.2.3.1 All field performed piping girth welds require NDE examination in accordance with the requirements of ASME B31.3-1996, para 341.4.1, plus the requirements of Table 7 of Appendix B.

- 3.8.2.3.2 NDE requirements for field performed joggle assembly and dual containment piping welds exceed Normal Fluid Service piping requirements in ASME B31.3-1996 and are stated in Table 7 of Appendix B.
- 3.8.2.3.3 When approved by Engineering, individual dual containment pipe jacket girth welds requiring 5% random RT or UT may, on a case by case basis, be examined by in-process examination in accordance with ASME B31.3, para 344.7 with VT of the root pass in accordance with 344.7.1(e).

3.8.2.4 **Bonded Plastics Weld NDE and Inspection Requirements**

Bonded plastics welds require examination in accordance with the requirements of ASME B31.3, para A341.4.1.

3.8.3 **Leak Testing**

- 3.8.3.1 Test pressures shall be in accordance with the design documents (e.g., applicable issued Pipeline List). The test pressure shall not exceed that allowed for any component or equipment within the boundary of the line being tested.
- 3.8.3.2 Perform hydrostatic or pneumatic testing of partial or completed systems in accordance with ASME B31.3 paragraph 345.
- 3.8.3.3 For piping designed for vacuum, the pipe shall be tested at an internal gage pressure equal to no less than 1.5 times the design external differential pressure, but not less than 15 psig while examining for leakage in accordance with ASME B31.3 paragraph 345.2.2(a). If the same line is also designed for positive pressure, the pressure testing requirement shall be considered satisfied when the test pressure is equal to or exceeds the required test pressure for vacuum. That is, the selected test pressure shall be the one that results in the highest test pressure.

3.8.3.4 **Vacuum Box Testing**

Vacuum box testing shall only be used on BC welds in lieu of hydrostatic or pneumatic testing in accordance with specification 24590-WTP-3PS-G000-T0011, *Engineering Specification for Vacuum Box Leak Testing* (including applicable change notices). The BC boundaries, including welds, are as defined in Section 3.3.

It is important to identify welds to be vacuum box tested before the weld is started in order to ensure that all in-process weld inspections and other requirements are scheduled, completed, and documented prior to vacuum box testing

3.8.3.5 **Closure Welds**

The following are the requirements for all piping system closure welds performed on piping not specifically located within BC areas. The scope of this section applies to HtR piping and all other piping not located within a BC.

The exception to leak testing of closure (termination) welds, using the provisions of ASME B31.3 (c)-1998 addendum, paragraph 345.2.3 (c), applies to all ASME B31.3 piping in all facilities except that it shall not be used for closure welds in BC areas, including the weld boundaries, as defined above in Section 3.3.

Closure welds shall meet the requirements of ASME B31.3 (c) - 1998 Addenda, paragraph 345.2.3(c); need not be leak tested, provided the following criteria are met:

- a) The requirements shall only be invoked on full penetration butt welds in straight pipe, full penetration butt welds at the safe-end of an equipment nozzle, or full penetration butt welds at the safe-end of branch connections. The safe-end is defined as the piping to equipment nozzle connecting weld or branch connection to branch connecting welds. Construction locates the closure welds in a system.
- b) The piping systems and/or components on both sides of the closure weld shall have been subjected to a hydrostatic leak test in accordance with ASME B31.3-1996 paragraph 345.4, a pneumatic leak test in accordance with ASME B31.3-1996 paragraph 345.5, a combination pneumatic-hydrostatic leak test in accordance with ASME B31.3-1996 paragraph 345.6, or in the case of components leak tested in accordance with the Code or Standard applicable to the design of the component.
- c) For manual welds, the requirements of ASME B31.3-1996 para 344.7.1 (a) thru (g), with the exception that the requirement of subparagraph 344.7.1 (e) "...aided by liquid penetrant or magnetic particle examination when specified in the engineering design" shall not be required. This consists of the following:
 1. Joint preparation and cleanliness;
 2. Preheating;
 3. Fit-up, joint clearance, and internal alignment prior to joining,
 4. Variables specified by the joining procedure, including filler material, position, and electrode;
 5. Condition of root pass after cleaning-external and, where accessible, internal. Use of MT or PT examination is not required;
 6. Slag removal and weld condition between passes; and
 7. Appearance of the finished joint.
- d) For welds made using orbital welding machines, the requirements of ASME B31.3-1996 paragraph 344.7.1 (a), (b), (c), (d), and (g) shall be invoked. This consists of the following:
 1. Joint preparation and cleanliness;
 2. Preheating;
 3. Fit-up, joint clearance, and internal alignment prior to joining,
 4. Variables specified by the joining procedure, including filler material, position, and electrode;
 5. Appearance of the finished joint.

- e) The implementation of the requirements listed in c) and d) above shall be documented in the weld inspection report.
- f) The closure weld passes 100% radiographic examination in accordance with ASME B31.3, paragraph 344.5, or 100% ultrasonic examination in accordance with B31.3, paragraph 344.6. See Section 3.8.2.4 for RT and UT acceptance criteria.
- g) Piping welds and the associated line numbers for which the closure weld classification is invoked shall be documented in the appropriate weld documentation.

3.8.3.6 Wet Lay-up

- 3.8.3.6.1 Where practical, all lines shall be drained dry after flushing or testing to remove stagnant water.
- 3.8.3.6.2 Carbon steel lines may be left in a wet lay-up condition provided a rust inhibitor is added to the water to prevent internal rusting with design engineering approval. Otherwise, they shall be gravity drained, and/or blown dry.
- 3.8.3.6.3 Stainless steel, titanium, and nickel based alloy lines may be left in a temporary wet lay-up condition provided the water quality meets the requirements of Section 3.8.4.

3.8.3.7 Gravity Drainage System

All portions of the gravity drainage piping system shall be subjected to a water test as follows:

- 3.8.3.7.1 Those sections of the drainage systems embedded in a base mat or for piping buried beneath a slab on grade shall be tested by filling with water to the point of overflow from the highest drain outlet on the section (outlets at lower elevations shall be plugged). The water level in the highest outlet shall show no drop for a period of 15 minutes. Minimum test pressure shall be a 10 foot head of water, inserting a test plug with extension, if necessary. Draining after water testing is not required.
- 3.8.3.7.2 Drainage sections below grade level shall be tested before the connection to the site sewer is made.
- 3.8.3.7.3 All sections of drainage systems above the base mat or slab on grade shall be subjected to static head tests. The pressure at the highest point on the section under test shall be 10 feet of water higher than the maximum static head which can develop at the base of the section with overflow occurring from open drains on the next higher level. Test pressure shall be maintained without drop for 15 minutes.
- 3.8.3.8 If motor- or air-operated valves or control valves are used as boundaries, care must be taken to preclude excessive differential pressure as determined from manufacturer's data.

- 3.8.3.9 Verify the maximum allowable pressure or differential pressure from manufacturer's data for pumps, valves, heat exchangers (shell-to-tube differential), and other in-line equipment before testing.
- 3.8.3.10 Instrument tubing may be tested simultaneously with the process lines. Remove or isolate instruments during testing.
- 3.8.3.11 For hydrostatic testing, pressure gauges shall be located at the piping system high point, if practical, exclusive of temporary piping or the test pump; otherwise, proper compensation shall be made for the liquid pressure head above the gauge. Pressure gauges shall be of the test gauge variety, with an accuracy of 1/2 of 1 percent and shall be in calibration before being used to perform hydrostatic testing.
- 3.8.3.12 All welds, mechanical joints, thickness transitions, except shop-fabricated piping that has been coated and wrapped, must be completely visible during system hydrotesting.
- 3.8.3.13 Complete all attachment welds before system testing. In cases where the installation of the attachments to the piping system is required after leak testing, it shall meet the requirements of the governing piping code, ASME B31.3, Paragraph 345.2.6.
- 3.8.3.14 Relief valves shall be removed and blanked off (preferable), or gagged according to the valve manufacturer's recommendations during pressure tests. In no case will it be permissible to change the spring setting on the valve without prior permission from Engineering. Provide special relief valves with a maximum set pressure of 1-1/3 times the hydrotest pressure for hydrotesting when the test pressure is to be maintained for a period of time great enough to encounter a significant pressure increase due to thermal expansion of the entrapped fluid.
- 3.8.3.15 Temporarily restrain, isolate, or otherwise protect expansion joints from the additional loads accompanying a hydrotest, unless they are fully capable of withstanding the more severe loads. The expansion joint manufacturer's instructions shall prevail when hydrotesting the portion of the piping system containing the expansion joint.
- Prior to hydrotesting the expansion joint, Construction shall ensure all permanent deadweight supports/restraints are installed or Engineering approval has been obtained (via Field Change Request) for the addition of temporary supports.
- 3.8.3.16 The system temperature during hydrostatic testing shall be in excess of 70°F for piping attached to the boilers. For all other piping, the temperature shall be in excess of 32°F. Pipe and test media temperatures shall be approximately equal.
- 3.8.3.17 Except for flanged joints, valve seats, and valve packing, repair pressure boundary leaks then perform appropriate nondestructive tests before retesting. Flanged joints, valve seats, and valve packing do not need to be repaired, at this time, for the pressure test to be conducted, provided the test pressure can be maintained for the duration of the test.
- 3.8.3.18 Hydrostatic tests may be performed with the test pump in operation.

- 3.8.3.19 Where valves are used as test boundaries, the pressure shall not exceed the maximum hydrostatic seat pressure as determined from the valve manufacturer's data.
- 3.8.3.20 Leakage through a valve used as a test boundary shall neither constitute a failed pressure test nor shall it be a reason to terminate a test in progress provided that the test pressure in the section of piping being tested can be maintained.
- 3.8.3.21 Adequately vent all piping during filling to eliminate entrapped air.
- 3.8.3.22 Take post-hydrostatic test precautions to preclude tank collapse because of vacuum formation during draining.

3.8.4 Precautions to Preclude Microbiologically Induced Corrosion (MIC)

To minimize the potential for microbiologically induced corrosion, only treated or potable water shall be used for cleaning, flushing, and hydro testing. Stagnant water should not be left in the pipe or component for more than 72 hours. For longer times, not to exceed 160 hours, sodium hypochlorite shall be added in small amounts and the water tested so that the initial chlorine content does not exceed 15 ppm, and residual concentrations are greater than zero but less than 1 ppm after 24 hours. The water shall be drained as soon as practicable and within 160 hours. Where water cannot be completely drained or where pocketing, ponding, or puddling can occur after draining, Engineering approval shall be obtained prior to filling.

3.8.5 Source Water Quality Requirements

- 3.8.5.1 Only water treated with sodium hypochlorite or potable water shall be used for cleaning and testing and shall meet the requirements of Section 3.8.4 if left in the pipe or component for more than 72 hours.
- 3.8.5.2 Flushing shall be performed using potable or treated water, except that potable water systems shall be cleaned, flushed, and tested using potable water only.
- 3.8.5.3 In stainless steel, nickel based alloy, and titanium lines, water treated with sodium hypochlorite shall be tested if the water is to be left in a pipe or component for more than 72 hours to ensure that the chlorine content is greater than 0 ppm but less than 1 ppm to ensure the absence of microbiological activity using Rapid Check II, by Strategic Diagnostic Inc., or an approved equal.

3.9 Dangerous Waste Piping

Construction shall notify and coordinate with the independent Dangerous Waste Permit Inspector as required by 24590-WTP-GPP-CON-7112, *Dangerous Waste Permit (DWP) Third Party Inspection Interface*, the inspection activities related to the installation of dangerous waste tank systems and miscellaneous treatment systems. The issued P&ID line list and outstanding DCNs associated with each P&ID will identify which pipe is DWP.

4 Configuration Management

Configuration Management is maintained by fabrication and installation in accordance with approved drawings and procedures. Fabrication and installation shall be performed in accordance with approved documents. Where fabrication and installation cannot be accomplished in accordance with approved procedures and drawings, Engineering shall be promptly notified. Fabrication and installation shall not proceed until such time as a resolution is approved and proper documentation is provided.

5 Documentation and Submittals

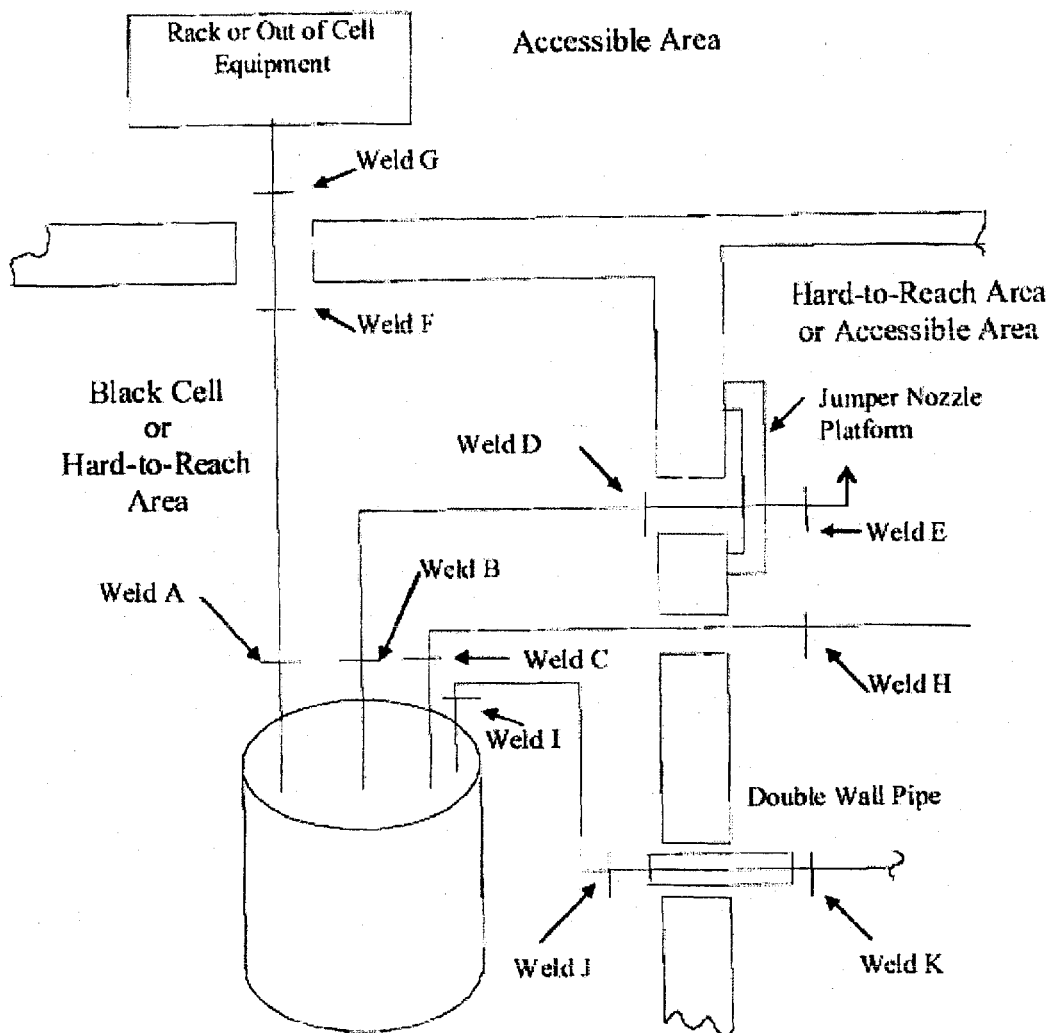
Documentation is provided by approved procedures and drawings. Any records generated by working to procedures and drawings shall be submitted to PDC for logging and issuance.

Appendix A, Examples of Black Cell and Hard to Reach Piping

This figure is Figure 16-1 Examples of black cell and hard-to-reach piping that is shown in Section 16 of 24590-WTP-DB-ENG-01-001, Basis of Design. This supplements the BC and HTR requirements listed above in Section 3.3 of this Specification.

Figure 1 Examples of Black Cell and Hard-to-Reach Piping

Notes related to this Figure are on following sheet.



Notes:

1. Black cell piping extends between termination welds. Examples include the piping and welds extending from Weld A to Weld G, From Weld B to Weld E, from Weld C to Weld H, and Weld I to Weld K.
2. The piping procured as part of equipment and penetrating the black cell or hard to reach area walls shall meet the same design, fabrication, construction, testing, and inspection requirements as the black cell or hard-to-reach piping to which it attaches out to the first weld outside of a black cell or a hard to reach area. An example of this is the component piping between Weld F and Weld G, and Weld J to Weld K.
3. The piping procured as part of a jumper platform that penetrates a black cell or hard-to-reach area wall shall meet the same design, fabrication, construction, testing, and inspection requirements as the black cell or hard to reach piping to which it attaches out to the first weld outside of the black cell or hard to reach area. An example of this is the piping between Weld D and Weld E.
4. Hard-to-reach piping includes pipe spools extending from a field weld inside the hard-to-reach area across a wall or slab out to the first accessible field weld out in an R2/R3 area. Examples include the piping and welds extending from Weld A to Weld G and Welds C to Weld H.
5. Joggles:
 - a. Joggles are considered black cell pipe from the weld inside the black cell out to the first accessible field weld located in an R2/R3 area, similar to the straight-through piping show in the figure from Weld C to Weld H.
 - b. Joggles are considered hard-to-reach pipe from the weld inside the hard-to-reach area out to the first accessible field weld located in an R2/R3 area, similar to the straight-through piping show in the figure from Weld C to Weld H.
 - c. Joggle configurations come in three basic types:
 - 1) Single Pipe Joggle: joggle pipe directly embedded, treated as either black cell, hard-to-reach, or standard pipe, depending on classification of piping attached to the ends and is designed, fabricated, installed, inspected, examined, and tested to ASME B31.3-1996.
 - 2) Sleeve Joggle: joggle pipe is surrounded by an outer joggle sleeve, where the function of the sleeve is solely to provide space between the joggle pipe and the concrete. Here the sleeve only serves as a concrete form, similar to a standard straight-through penetration sleeve. These joggles may be insulated or may have only an open air space between the inner pipe and the outer sleeve. The inner joggle pipe can be black cell, hard-to-reach, or standard pipe, depending on what type of piping attaches to the ends and is designed, fabricated, installed, inspected, examined, and tested to ASME B31.3-1996. The outer joggle pipe is a pipe sleeve only and is not required to be designed or fabricated to ASME code, but is required to meet the structural design and fabrication codes.
 - 3) Double Encased Pipe Joggle: joggle pipe surrounded by an outer pipe that serves as a secondary confinement boundary as defined within WTP WDOE permit documents. These joggles cannot be insulated and can be black cell, hard-to-reach, or standard pipe, depending on what type of piping attaches to the ends. Both the inner and outer pipe are designed, fabricated, installed, inspected, examined, and tested to ASME B31.3-1996.

Appendix B, Summary Table of Non-Destructive Examinations (NDE) of Pipe & Tubing Field Welds

Table 7 Piping Field Performed Weld Examination Requirements

See Section 3.8.2.3 for BC and HTR Weld NDE and Inspection Requirements. Acceptance criteria are as called out in ASME B31.3-1996, Table 341.3.2.

Type of Weld ↓	Piping Outside Black Cells and Hard-To-Reach areas ^{1,2,3}	Piping Inside Black Cells and Hard-To-Reach areas ^{Error! Bookmark not defined.} _{4,5}	Dual Containment (outside BC or HtR areas)	
			Inner Piping	Outer/Jacket Piping ^{Error! Bookmark not defined.}
All Girth and Miter Welds ⁶	100% VT 5% RT or 5% UT	100% VT 100% RT or 100% UT	100% VT 100% RT or 100% UT	100% VT 5% RT or 5 % UT
All Manufacturer Produced Longitudinal Seam Welds ⁷	N/A	100% RT or 100% UT	100% RT or 100% UT	N/A
Outer Pipe Field Performed Longitudinal/Clam Shell Welds for Dual Contained Piping	N/A	100% VT 100% RT or 100% UT	N/A	100% VT 5% RT or 5 % UT
Double Encased Pipe Joggle Assemblies (field performed welds on both inner and outer piping)	N/A	100% VT 100% PT 100% RT or 100% UT	100% VT 100% PT 100% RT or 100% UT	100% VT 100% PT 100% RT or 100 % UT
Sleeved Joggle Assemblies (field performed welds on inner piping only)	N/A	100% VT 100% PT 100% RT or 100% UT	100% VT 100% PT 5% RT or 5 % UT	N/A
All Pipe and Integral Attachment Fillet Welds - including thermowell socket welds, integral support welds, liner plate-to-piping attachment welds, non pressure & non load bearing piping attachment welds.	100% VT	100% VT 100% PT	100% VT 100% PT or MT	100% VT
All integrally reinforced forged welded branch fittings welded to main piping run. If 100% RT will not produce an interpretable radiograph, In-Process Examination and liquid penetrant examination on exterior of both the root and final pass weld may be substituted. ⁶	100% VT	100% VT 100% RT	100% VT 100% PT or MT	100% VT

24590-WTP-3PS-PS02-T0003, Rev 8
Field Fabrication and Installation of Piping

For BC/HtR piping, fillet or full penetration welds attaching the end plate or cap closing the annulus between the outer jacket pipe and inner process pipe of dual containment piping spools shall be fully visual (VT) examined and fully radiographic examined (RT). ⁸ If 100% RT will not produce an interpretable radiograph, In-Process Examination and liquid penetrant examination of the exterior of both the root and final pass weld is acceptable.		100% VT 100% RT			
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¹ Includes embedded piping, but does not apply to dual containment piping, double encased joggles, or sleeved joggles. Those requirements are specified elsewhere in Table 7.

² Where radiographic examination (RT) is allowed or specified for field performed welds, the radiographic acceptance criteria for ASME B31.3-1996, Table 341.3.2, Normal Fluid Service applies, except that incomplete penetration shall not be permitted.

³ Where ultrasonic examination (UT) is allowed or specified for field performed welds, UT techniques shall be performed with automated devices. Use of manual or semi-automated scanning devices shall be subject to the evaluation and approval of a Bechtel UT level III. UT acceptance criteria shall be in accordance with the following. Imperfections which produce a response greater than 20% of the reference level shall be investigated to the extent that the operator can determine the shape, identity, and the location of all such imperfections and evaluate them in terms of the acceptance standards given in (A) and (B) following:

- (A) Indications characterized as cracks, lack of fusion, or incomplete penetration are unacceptable regardless of length.
 (B) Other imperfections are unacceptable if the indication exceeds the reference level amplitude and has lengths which exceed:
- $\frac{1}{4}$ inch for t up to $\frac{1}{4}$ inch
 - $(\frac{1}{2})t$ for t from $\frac{1}{4}$ inch to 2 $\frac{1}{4}$ inch
- ("t" is the thickness of the weld or thinner of the two materials being joined).

⁴ Where radiographic examination (RT) is allowed or specified for field performed welds, the radiographic acceptance criteria for ASME B31.3-1996, Table 341.3.2, Normal Fluid Service applies, except that incomplete penetration and internal undercut shall not be permitted.

⁵ Where liquid penetrant examination (PT) or magnetic particle examination (MT) is allowed or specified, no cracks shall be permitted.

⁶ The circumferential weld that connects an integrally reinforced forged welded branch fitting to the branch pipe run shall be examined as a girth weld.

⁷ Only applies to stainless, titanium, or nickel alloy pipe and fittings used in Black Cells or Hard-to-Reach areas within the HLW and PTF facilities or for the inner pipe of dual containment piping.

⁸ This is applicable to specifically allowed applications in black cell and hard-to-reach areas listed in Section 3.8.2.2.4.

Appendix C, *Embedded Pipe Spacing (Other Than Those Passing Through Engineered Penetrations)*

Figure 2 Parallel Pipes (Adjacent Not Crossing) Horizontal or Vertical Plane

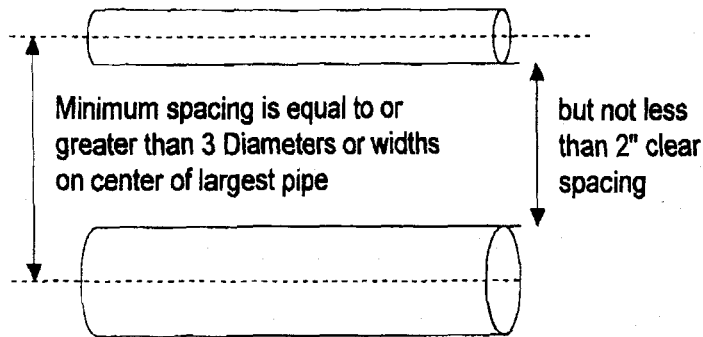


Figure 3 Perpendicular Pipes Crossing (+30 Degrees to - 30 Degrees)

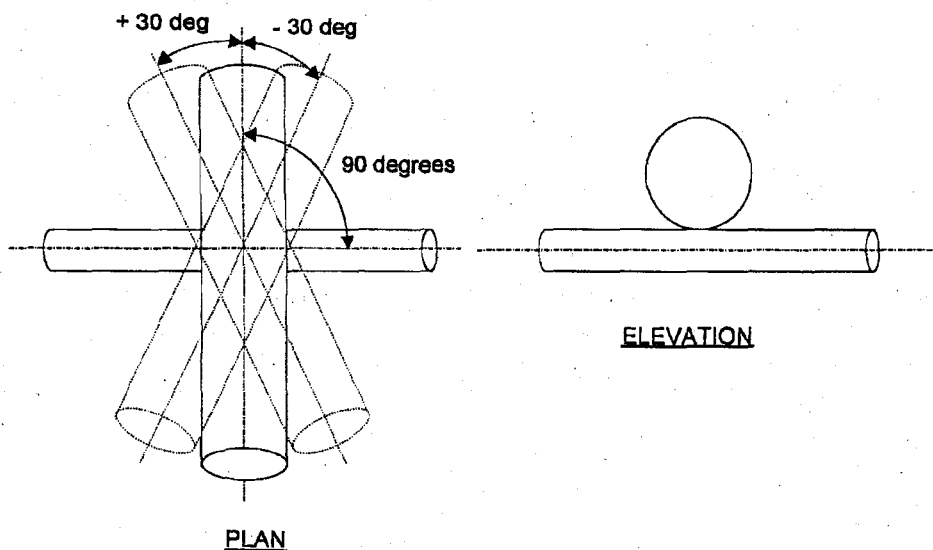


Figure 4 Multiple Crossing of Pipes - Plan View

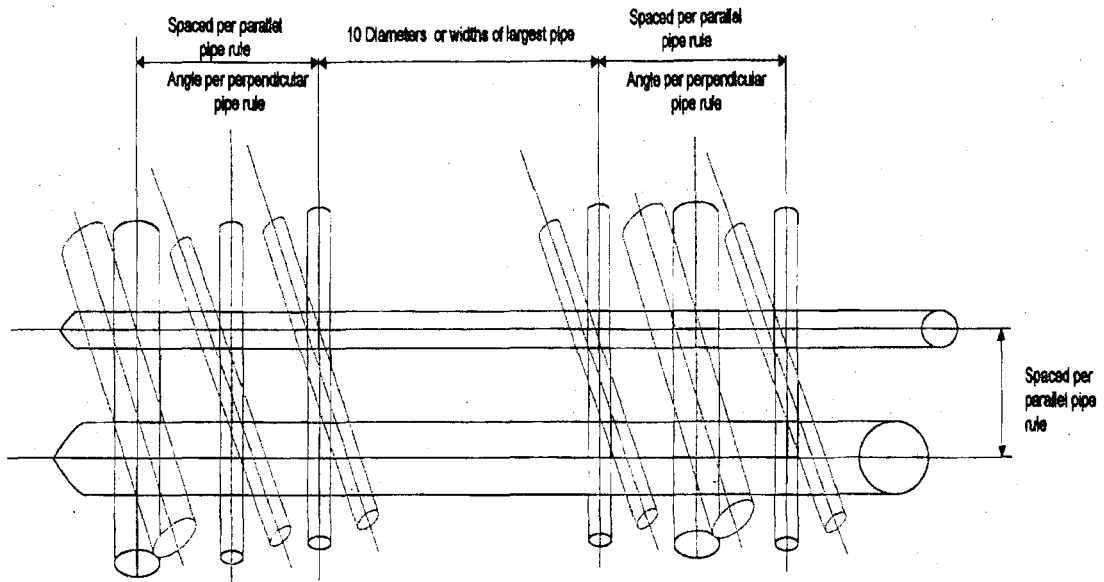
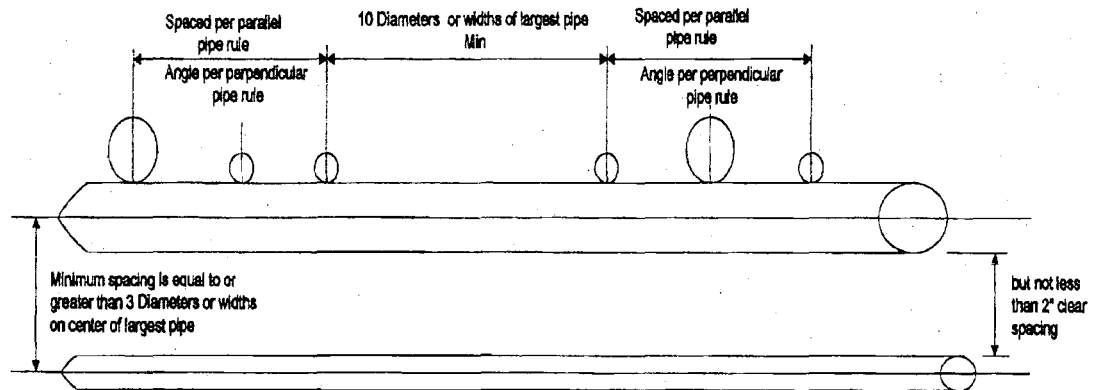


Figure 5 Multiple Crossing of Pipes - Elevation View



Quarter Ending June 30, 2010

24590-LAW-PCN-ENV-06-017

Hanford Facility RCRA Permit Modification Notification Form**Part III, Operating Unit 10****Waste Treatment and Immobilization Plant**

Index

Page 2 of 3: Hanford Facility RCRA Permit, Part III, Operating Unit 10, Waste Treatment and Immobilization Plant
Update the integrity assessments in Appendix 9.11 of the Dangerous Waste Permit for the LAW Facility's Secondary Containment Cells/Rooms located at floor elevation (-)21'-0" (Cell L-B001B); elevation 3'-0" (@ elevation 2'-0" Cells L-0123, L-0124, and L-0126); elevation 28'-0" (Room L-0218); and elevation 48'-0" (Room L-0304F) within the building.

Submitted by Co-Operator:

Donna M Busche
D. M. Busche

3/23/10
Date

Reviewed by ORP Program Office:

G. A. Girard
G. A. Girard

4/2/10
Date

Quarter Ending June 30, 2010

24590-LAW-PCN-ENV-06-017

Hanford Facility RCRA Permit Modification Notification Form

Unit:

Waste Treatment and Immobilization Plant

Permit Part:

Part III, Operating Unit 10**Description of Modification:**

The purpose of this modification is to update the Integrity Assessment of the Low Activity Waste (LAW) secondary containment cells and rooms located at elevations (-)21'-0", 3'-0", 28'-0", and 48'-0" currently located in Appendix 9.11 of the Dangerous Waste Permit (DWP).

Appendix 9.11

Replace:	24590-CM HC4-HXYG-00138-01-06A	With:	CCN 169564, Areva Federal Services Number: IA-3002605-000
	24590-CM HC4-HXYG-00138-01-10, Rev. 00B		
	24590-CM HC4-HXYG-00138-02- 00018, Rev. 00A		

This modification requests Ecology approval and incorporation into the permit the above mentioned integrity assessment report. The report has been updated by the Independent Qualified Registered Professional Engineer (IQRPE). The report reflects the IQRPE's review of drawings, specifications and data sheets produced in accordance with references including the following:

- 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design;
- 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;
- WTSC99-1036-42-17, RPP-WTP Final Report Geotechnical Investigation, Shannon & Wilson Inc. (H-1616-51), May 2000;
- ACI 318-99, Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute;
- ACI 349-01, Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary, American Concrete Institute;
- ASCE 7-98, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers;
- 24590-LAW-DBC-S13T-00003, Rev. 1, Differential Settlement Effects on the Foundation (Calculations);
- UBC 1997, Uniform Building Code;
- AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition;

For each item of "Information Assessed" (i.e., Criteria) on the following pages, the items listed under "Source of Information" were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, *Dangerous Waste Regulations*, WAC-173-303-640, *Tank Systems*.

Quarter Ending June 30, 2010

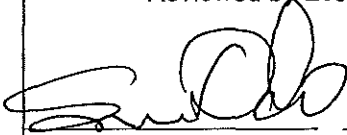
24590-LAW-PCN-ENV-06-017

WAC 173-303-830 Modification Class:	Class 1	Class ¹ 1	Class 2	Class 3
Please mark the Modification Class:		X		

Enter relevant WAC 173-303-830, Appendix I Modification citation number:

Enter wording of WAC 173-303-830, Appendix I Modification citation:

In accordance with WAC 173-303-830(4)(d)(i), this modification notification is requested to be reviewed and approved as a Class ¹1 modification. WAC 173-303-830(4)(d)(ii)(A) states, "Class 1 modifications apply to minor changes that keep the permit current with routine changes to the facility or its operation. These changes do not substantially alter the permit conditions or reduce the capacity of the facility to protect human health or the environment. In the case of Class 1 modifications, the director may require prior approval."

Modification Approved/Concur: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Denied (state reason below) <u>Reason for denial:</u> <i>It contains new information</i>	Reviewed by Ecology:  Kelly Elsethagen	Date 7/7/10
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ISSUED BY
RPP-WTP PDC

169564



AFS-10-0049

February 24, 2010

Ms. Jennifer Broadbent
Subcontract Administrator
Bechtel National, Inc.
2435 Stevens Center Place
Richland, Washington 99354

RPP-WTP
RECEIVED
FEB 25 2010
BY PDC

Dear Ms. Broadbent:

**BECHTEL NATIONAL, INC. CONTRACT NO. 24590-CM-HC4-HXYG-00211
IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT FOR LAW
SECONDARY CONTAINMENT (IA-3002605-000)**

The structural integrity assessment of the subject secondary containment has been completed per the contract requirements and is enclosed for your use. The assessment found that the design is sufficient to ensure that the secondary containment is adequately designed and has sufficient structural strength, compatibility with the waste(s) to be processed/stored/treated, and corrosion protection to ensure that it will not collapse, rupture, or fail.

If you have any questions, please contact Tarlok Hundal at (509) 371-1975, or via email at tarlok.hundal@areva.com.

Sincerely,

Fred R. Renz
Contract Management
AREVA Federal Services LLC
Richland Office

Ilm

Enclosure (1)

cc: D. C. Pfluger, MS 5-L w/enclosure (2)

AREVA Federal Services LLC

2101 Horn Rapids Road, RC-19, Richland, WA 99354, P. O. Box 840, Richland, WA 99352
Tel.: 509 375 8096 - Fax: 509 375 8495 - www.areva.com

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW SECONDARY CONTAINMENT**

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

**IQRPE STRUCTURAL INTEGRITY ASSESSMENT REPORT
FOR
LAW SECONDARY CONTAINMENT**

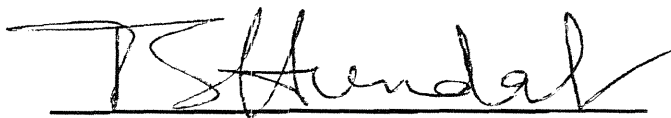
"I, Tarlok Hundal have reviewed, and certified a portion of the design of a new tank system or component located at the Hanford Waste Treatment Plant, owned/operated by Department of Energy, Office of River Protection, Richland, Washington. My duties were independent review of the current design for the LAW Secondary Containment, as required by the Washington Administrative Code, *Dangerous Waste Regulations*, Section WAC-173-303-640(3) (a) through (g) applicable components."

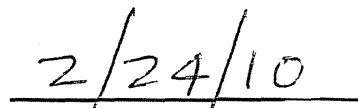
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

The documentation reviewed indicates that the design fully satisfies the requirements of the WAC.

The attached review is forty-five (45) pages numbered one (1) through forty-five (45).




Signature


Date

**IQRPE Structural Integrity Assessment Report for LAW
Secondary Containment**

IA-3002605-000

Scope	Scope of this Integrity Assessment	<p>This Integrity Assessment addresses the LAW Facility's Secondary Containment Cells/Rooms located at following floor elevations within the building:</p> <ol style="list-style-type: none">1. Floor Elev. (-)21'-0" (Cell L-B001B), pp. 4 thru 162. Floor Elev. 3'-0 (@ Elev. 2'-0": Cells L-0123, L-0124, and L-0126), pp. 17 thru 263. Floor Elev. 28'-0 (Room L-0218), pp. 27 thru 364. Floor Elev. 48'-0 (Room L-0304F), pp. 37 thru 45
Summary of Assessment		<p>For each item of "Information Assessed" (i.e., Criteria) on the following pages, the items listed under "Source of Information"* were reviewed and found to furnish adequate design requirements and controls to ensure that the design fully satisfies the requirements of Washington Administrative Code (WAC), Chapter 173-303 WAC, <i>Dangerous Waste Regulations</i>, WAC-173-303-640, <i>Tank Systems</i>.</p>

References	Drawings	<p>24590-LAW-P1-P01T-00001, Rev. 3, LAW Vittrification Building General Arrangement Plan at El. (-)21'-0";</p> <p>24590-LAW-P1-P01T-00002, Rev. 5, LAW Vittrification Building General Arrangement Plan at El. 3'-0";</p> <p>24590-LAW-P1-P01T-00003, Rev. 4, LAW Vittrification Building General Arrangement Plan at El. 22'-0";</p> <p>24590-LAW-P1-P01T-00004, Rev. 4, LAW Vittrification Building General Arrangement Plan at El. 28'-0";</p> <p>24590-LAW-P1-P01T-00005, Rev. 3, LAW Vittrification Building General Arrangement Plan at El. 48'-0";</p> <p>24590-LAW-P1-P01T-00006, Rev. 1, LAW Vittrification Building General Arrangement Plan at El. 68'-0";</p> <p>24590-LAW-P1-P01T-00007, Rev. 8, LAW Vittrification Building General Arrangement Section A-A, B-B, C-C, and S-S;</p> <p>24590-LAW-P1-P01T-00008, Rev. 7, LAW Vittrification Building General Arrangement Section D-D, E-E, F-F, and T-T;</p> <p>24590-LAW-P1-P01T-00009, Rev. 8, LAW Vittrification Building General Arrangement Section G-G, H-H, and J-J;</p> <p>24590-LAW-P1-P01T-00010, Rev. 8, LAW Vittrification Building General Arrangement Section K-K, L-L, and M-M;</p> <p>24590-LAW-P1-P01T-00011, Rev. 6, LAW Vittrification Building General Arrangement Section N-N, P-P, R-R, and U-U;</p> <p>24590-WTP-FSK-CON-T-01-004, Rev. 7, Field Sketch HLW and LAW Excavation and Mudmat;</p> <p>24590-LAW-DO-S13T-00002, Rev. 11, LAW Vittrification Building Main Building General Concrete Notes;</p> <p>24590-LAW-DB-S13T-00003, Rev. 9, LAW Vittrification Building Main Building Concrete Key Plan at El. (-) 21'-0";</p> <p>24590-LAW-DB-S13T-00004, Rev. 1, LAW Vittrification Building Main Building Concrete Key Plan at El. (+) 3'-0";</p> <p>24590-LAW-DB-S13T-00005, Rev. 0, LAW Vittrification Building Main Building Concrete Key Plan at El. (+) 28'-0";</p> <p>24590-LAW-DB-S13T-00006, Rev. 0, LAW Vittrification Building Main Building Concrete Key Plan at El. (+) 48'-0";</p> <p>24590-LAW-DB-S13T-00007, Rev. 3, LAW Vittrification Building Main Building Conc. Forming Plan Zone 1 @ El. (-) 21'-0";</p> <p>24590-LAW-DB-S13T-00020, Rev. 1, LAW Vittrification Building Main Building Partial Conc. Forming Plan Zone 7 @ El. (+) 2'-0, (Process Cells);</p> <p>24590-LAW-DB-S13T-00021, Rev. 2, LAW Vittrification Building Main Building Partial Conc. Forming Plan Zone 8 @ El. (+) 2'-0, (Process and Effluent Cells);</p> <p>24590-LAW-DB-S13T-00028, Rev. 4, LAW Vittrification Building Main Bldg. Partial Conc. Forming Plan Zone 5 @ El. (+) 28'-0";</p> <p>24590-LAW-DB-S13T-00135, Rev. 8, LAW Vittrification Building Main Bldg. Partial Conc. Forming Plan Zone 5 @ El. (+) 48'-0";</p> <p>24590-LAW-DD-S13T-00001, Rev. 6, LAW Vittrification Building Main Bldg. Liner Plate Grillage Details;</p> <p>24590-LAW-DD-S13T-00002, Rev. 2, LAW Vittrification Building Main Bldg. Conc. Embedment C3/C5 Grillage at El. (-) 21'-0";</p> <p>24590-LAW-DD-S13T-00004, Rev. 3, LAW Vittrification Building Main Bldg. Process Cell Melter #1 Support Ring & Grillage Sub-Assembly;</p> <p>24590-LAW-DD-S13T-00005, Rev. 2, LAW Vittrification Building Main Bldg. Process Cell Melter #2 Support Ring & Grillage Sub-Assembly;</p> <p>24590-LAW-DD-S13T-00006; Rev. 4, LAW Vittrification Building Main Bldg. Effluent Cell Ring Support Ring & Grillage Sub-Assembly;</p> <p>24590-LAW-DD-S13T-00009, Rev. 5, LAW Vittrification Building Main Bldg. Process and Effluent Cell Vessel Anchorage/ Support Ring Schedule & Details;</p> <p>24590-LAW-DD-S13T-00012, Rev. 1, LAW Vittrification Building Main Bldg. C3/C5 Collection Vessel Embed Assy;</p> <p>24590-LAW-DD-S13T-00014, Rev. 5, LAW Vittrification Building Main Bldg. 24" and 30" Dia. Sump Details;</p>
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References (cont'd)	Drawings	<p>24590-LAW-DG-S13T-00005, Rev. 2, LAW Vitrification Building Main Building Bot. Conc Reinf. Plan Zone 1 @ El. (-) 21'-0";</p> <p>24590-LAW-DG-S13T-00012, Rev. 2, LAW Vitrification Building Main Building Top Conc Reinf. Plan Zone 1 @ El. (-) 21'-0";</p> <p>24590-LAW-DG-S13T-00025, Rev. 2, LAW Vitrification Building Main Building Partial Reinf. Plan Zone 7 @ TOC El. (+) 2'-0";</p> <p>24590-LAW-DG-S13T-00026, Rev. 2, LAW Vitrification Building Main Building Partial Reinf. Plan Zone 8 @ TOC El. (+) 2'-0";</p> <p>24590-LAW-DG-S13T-00035, Rev. 4, LAW Vitrification Building Main Building Partial Reinf. Plan Zone 5 @ TOC El. (+) 28'-0";</p> <p>24590-LAW-DG-S13T-00174, Rev. 3, LAW Vitrification Building Main Building Partial Reinf. Plan Zone 5 @ TOC El. (+) 48'-0";</p> <p>24590-LAW-SS-S15T-00011, Rev. 4, LAW Vitrification Building Main Bldg. Structural Steel Partial Floor Plan Zone 7 @ TOS El. (+) 0'-4";</p> <p>24590-LAW-SS-S15T-00012, Rev. 4, LAW Vitrification Building Main Bldg. Structural Steel Partial Floor Plan Zone 8 @ TOS El. (+) 0'-4";</p> <p>24590-LAW-SS-S15T-00018, Rev. 7, LAW Vitrification Building Main Bldg. Structural Steel Partial Floor Plan Zone 5 @ TOS El. (+) 27'-0";</p> <p>24590-LAW-SS-S15T-00027, Rev. 9, LAW Vitrification Building Main Bldg. Structural Steel Partial Floor Plan Zone 5 @ TOS El. (+) 47'-0".</p>
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**IQRPE Structural Integrity Assessment Report for LAW
Secondary Containment @ Floor Elev. (-) 21'-0"**

IA-3002605-000

	Information Assessed	Source of Information	Assessment
Design	Description of subsurface conditions and soil bearing capacity are adequate.	<p>Drawings listed above under references;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>WTSC99-1036-42-17, RPP-WTP Final Report Geotechnical Investigation, Shannon & Wilson Inc. (H-1616-51), May 2000;</p> <p>24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill;</p> <p>24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services;</p> <p>24590-LAW-DBC-S13T-00001, Rev. 1, Foundation Wall Calculations for Lateral Soil Loads;</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations);</p> <p>24590-WTP-3DP-G04B-00037, Rev. 15B, Engineering Calculations;</p> <p>24590-LAW-S0C-S15T-00001, Rev. 0, GTStrudl Finite Element Analysis Model;</p> <p>24590-LAW-S0C-S15T-00002, Rev. 1, LAW Floor Loading (Calculations);</p> <p>24590-LAW-S0C-S15T-00003, Rev. 0, Spring Base Static Analysis (Calculations);</p> <p>24590-LAW-DBC-S13T-00008, Rev. 1, Preliminary Foundation Sizing (Calculations).</p>	<p>The Structural Design Criteria provides adequate design guidance for both mat and spread footings based on the Geotechnical Investigation report for the facility. Bearing capacity and settlement design parameters are presented for the dense Hanford Upper and Lower Sand Units and Structural Fill. Use of the loose wind blown (dune) sands for foundations is precluded. The Specification for Excavation and Backfill provides structural backfill requirements based on the geotechnical report and current codes and standards for the selection, placing, compacting, and backfill testing of candidate fill materials and completed backfills. The Specification for Material Testing Services provides current adequate codes and standards for testing of the candidate structural fill materials and in-situ testing of structural fills as they are placed. The drawings show that appropriate foundation subsurface and backfill materials have been utilized and/or placed under and around the secondary containment structure. Review of the Concrete Reinforcing design calculations of the concrete cell L-B001B acting as secondary containment for the vessel (RLD-VSL-00004) located in this cell show that the subsurface conditions and bearing capacity are adequate to sustain the applicable loads. The methodology described in the Engineering Calculations document assures that the final secondary containment structure is designed to comply with all applicable requirements. Review of the design calculations shows that the allowable soil bearing capacity used is appropriate and adequate.</p>

Information Assessed		Source of Information	Assessment
Design (cont'd)	Foundation design loads (including full tanks) and estimated settlement are adequately considered.	<p>Drawings listed above under references;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>ACI 318-99, Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute;</p> <p>ACI 349-01, Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary, American Concrete Institute;</p> <p>ASCE 7-98, Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers;</p> <p>24590-LAW-DBC-S13T-00003, Rev. 1, Differential Settlement Effects on the Foundation (Calculations);</p> <p>24590-LAW-DBC-S13T-00008, Rev. 1, Preliminary Foundation Sizing (Calculations);</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations);</p> <p>24590-LAW-S0C-S15T-00002, Rev. 1, LAW Floor Loading (Calculations);</p> <p>24590-LAW-DBC-S13T-00019, Rev. A, Elevation +3 Slab on Grade (Calculations);</p> <p>24590-LAW-DBC-S13T-00005, Rev. 0, Thermal Analysis for the Basemat and Pour Cave Walls (Calculations).</p>	<p>The Structural Design Criteria uses current adequate standards to define design loads and load combinations (ACI 318-99, ACI 349-01, and ASCE 7-98). Dead and fluid loads are included in these loads and load combinations. Settlement design parameters are included in the Structural Design Criteria (Section 7.7, Geotechnical Design Parameters and Foundation Design). Review of the design calculations show that full load of the vessel, equipment, and other miscellaneous loads have been appropriately considered for the foundation design and the design drawings accurately reflect the detail as shown in the design calculations.</p>

Information Assessed		Source of Information	Assessment
Design (cont'd)	Design calculation approach and design basis of footings with design standard references (e.g., ACI) are adequate.	<p>Drawings listed above under references;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>ACI 318-99, Building Code Requirements for Structural Concrete and Commentary, American Concrete Institute;</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations);</p> <p>24590-LAW-S0C-S15T-00001, Rev. 0, GTStrudl Finite Element Analysis Model;</p> <p>24590-WTP-VV-ST-01-001, Rev. 5A, Verification and Validation Test Plan and Test Report for GTSTRUDL.</p>	<p>The Basis of Design document provides many fundamental general requirements for footing design. The Structural Design Criteria document references current adequate detailed design criteria for the design of concrete foundations and footings. ACI 318-99 code is referenced for the strength design of the secondary containment structures. Review of the Foundation Basemat Design calculations shows that design approach, basis, and methodology used for the design of the secondary containment foundations/footings is appropriate. And the conclusions of the design calculations are correctly shown in the design drawings. The above mentioned codes and standards, design approach, methodology, and basis delineated are appropriate and adequate for the foundation design. The input parameters used in the GTSTRUDL computer code utilized for this secondary containment design are appropriate and the output results have been appropriately validated via the Verification and Validation Test Plan and Test Report document.</p>

Information Assessed		Source of Information	Assessment
Foundation Design	Foundation material is compatible with the soil.	<p>Drawings listed above under references;</p> <p>24590-WTP-3PS-DB01-T0001, Rev. 8, Engineering Specification for Furnishing and Delivering Ready-Mix Concrete;</p> <p>24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services;</p> <p>24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.</p>	<p>The materials for secondary containment structure and backfill used under it are consistently identified in the specifications, drawings, and calculations. The Specification for Furnishing and Delivering Ready-Mix Concrete provides adequate current testing requirements for the selection of coarse and fine aggregates and the procurement of cementitious materials. Adequate test procedures are provided in the Material Testing Services specification for testing candidate concrete aggregates for chemical reactivity. Instructions for mixing and delivering ready-mix concrete are adequate and current. The Specification for Excavation and Backfill provide adequate requirements for the material used under foundation. As noted in the Basis of Design document (Section 4.7), the groundwater table is more than 250 feet below the ground surface; therefore, no compatibility problem is expected between the concrete foundation and the surrounding backfill materials used under and around it.</p>
	Foundation will withstand the effects of frost heave.	<p>Drawings listed above under references;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.</p>	<p>The Structural Design Criteria includes adequate provisions to preclude frost heave in the section addressing lateral earth pressure loads. All structural foundations are required to extend into the soil below the frost line to preclude frost heave. The frost line depth is 30 in. below the finished grade. The structural drawings show that bottom of the foundation basemat of secondary containment cell L-B001B is at Elev. (-) 26'-0", i.e., 26 ft below the finished grade elevation, therefore, it will not be subjected to frost heave effects.</p>

	Information Assessed	Source of Information	Assessment
Seismic	Seismic considerations have been adequately addressed.	<p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; 24590-WTP-PSAR-ESH-01-002-03, Rev. 4I, Preliminary Documented Safety Analysis (PDSA) to Support Construction Authorization: LAW Facility Specific Information; UBC 1997, Uniform Building Code; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition; 24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations); 24590-LAW-DBC-S13T-00001, Rev. 1, Foundation Wall Calculations for Lateral Soil Loads; 24590-LAW-DBC-S13T-00011, Rev. 2C, Basement Wall Design (Calculations).</p>	<p>The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The LAW Facility PDSA document designates the LAW facility Structures, Systems, and Components (SSCs) to be Seismic Category III (SC-III) and performance category 2 (PC-2) for other natural phenomenon hazards (NPH). The Structural Design Criteria document provides detailed discipline specific codes and standards for the design of SC-III LAW secondary containment foundations, structures, and liners by the design engineers. Design loads and analysis methods for SC-III secondary containments and liners are taken from the Uniform Building Code (UBC 1997). The ACI 318-99 code provides the design requirements and load combinations for the design of the secondary containment reinforced concrete foundations and structures. The AISC M016-89 code is used for the design of SC-III secondary containment stainless steel liners and all structural steel elements. The above listed codes, standards, and documents adequately address the applicable seismic requirement and review of the design calculations shows that these requirements are appropriately considered and met.</p>

Information Assessed		Source of Information	Assessment
Compatibility	The stored waste is compatible with its Secondary Containment and leak detection hardware based on a detailed chemical and physical analysis of the wastes used and other information sources.	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-J-02-001, Rev. 4, Leak Detection – Sump Level Measurement in Secondary Containment Systems.</p>	<p>The Basis of Design document states that secondary containment structure is to be appropriately lined and any leaks or spills will be removed within 24 hours of a leak detection or in as timely a manner as possible. Based on a detailed chemical and physical analysis of the wastes and other process information sources; the Material Selections report identifies appropriate corrosion resistant materials for secondary containment liners and leak detection hardware. The Secondary Containment Design document provides adequate typical construction details for liners including tank anchorage details, sumps, and leak detection equipment to be used for secondary containment structures. Typical details are furnished for leak detection/sump level measurement systems equipment in the Leak Detection-Sump Level Measurement document. The above mentioned documents provide adequate information that the materials and hardware used are compatible with the waste and the design drawings show the appropriate required installation details.</p>

	Information Assessed	Source of Information	Assessment
Strength	<p>The design shows that the Secondary Containment has sufficient strength and thickness to prevent failure owing to pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stress of daily operations (e.g., vehicular traffic).</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-LAW-DBC-S13T-00001, Rev. 1, Foundation Wall Calculations for Lateral Soil Loads;</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations);</p> <p>24590-LAW-S0C-S15T-00002, Rev. 1, LAW Floor Loading (Calculations).</p> <p>24590-LAW-PER-M-02-002, Rev. 6, Flooding Volume for LAW Facility (Calculations);</p> <p>24590-LAW-DBC-S13T-00011, Rev. 2C, Basement Wall Design (Calculations).</p>	<p>The Structural Design Criteria document identifies adequate and appropriate design codes and standards and all applicable load cases from site specific conditions that must be considered in the design. Pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stresses of daily operations are adequately stated as design goals in the Basis of Design document. The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The secondary containments being considered is located in the below ground level cells (L-B100B) inside the LAW facility, therefore, is not subject to vehicular traffic. Applicable pressure gradient due to soil load are considered in the design calculations. The design calculations and drawings reviewed show that the foundation slab and the secondary containment walls are adequately designed to sustain the applicable loads imposed by vessel, liner plate and equipment, and that of the soil around the secondary containment cell and that it will not fail due to these loads.</p>

Information Assessed		Source of Information	Assessment
Strength (cont'd)	The Secondary Containment system has sufficient strength in the presence of operational stresses from site-specific conditions (i.e., traffic, heavy equipment, precipitation, frost).	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection;</p> <p>24590-LAW-DBC-S13T-00001, Rev. 1, Foundation Wall Calculations for Lateral Soil Loads;</p> <p>24590-LAW-DBC-S13T-00011, Rev. 2C, Basement Wall Design (Calculations);</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations).</p>	<p>The LAW drawings show secondary containment being considered is installed below grade inside the building. Because it is located inside the building, traffic, heavy equipment, precipitation and frost are not applicable load cases. The Secondary Containment Design document identifies the applicable load cases (operational stresses) from site specific conditions that must be considered in the design. The Engineering Specification for Furnishing Stainless Steel Liner Plates includes specific provisions for protection and repair of completed liners during the construction process. The Material Selections for Building Secondary Containment document addresses the potential effects of operations conditions on liner integrity and the associated maintenance requirements. The design calculations and drawings show that the secondary containment structure has sufficient strength to sustain loads from applicable operational loads.</p>

Information Assessed	Source of Information	Assessment
<p>Foundation Integrity</p>	<p>The Secondary Containment is properly supported by a foundation or base in order to prevent failure from settlement, compression, or uplift, including the residual effects of installation.</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill;</p> <p>24590-WTP-3PS-DB01-T0001, Rev. 8, Engineering Specification for Furnishing and Delivering Ready-Mix Concrete;</p> <p>24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services;</p> <p>24590-LAW-DBC-S13T-00001, Rev. 1, Foundation Wall Calculations for Lateral Soil Loads;</p> <p>24590-LAW-DBC-S13T-00009, Rev. 2, Foundation Basemat Design (Calculations);</p> <p>24590-LAW-S0C-S15T-00002, Rev. 1, LAW Floor Loading (Calculations);</p> <p>24590-LAW-DBC-S13T-00003, Rev. 1, Differential Settlement Effects on the Foundation (Calculations).</p>

	Information Assessed	Source of Information	Assessment
Foundation Integrity (cont'd)	The placement, structural support, and type of material used for backfill around and below the Secondary Containment are appropriate.	<p>Drawings listed above under References;</p> <p>24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill;</p> <p>24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services;</p> <p>24590-WTP-PER-CON-02-001, Rev. 6, Installation of Tank Systems and Miscellaneous Unit Systems.</p>	<p>The drawings and Specification for Excavation and Backfill provide specific material to be used under and around the secondary containment foundations and contain placing and backfilling requirements. The Material Testing specifications contain current adequate industry standards for selecting and testing fill materials, and testing not less than once each lift to ensure adequate compaction. Requirements for testing and record keeping are current and adequate for the backfill around and below the secondary containment. Furthermore, the Certification of Construction by an independent, qualified, installation inspector or an independent, qualified, registered professional engineer (IQRPE) as required by the Installation of Tank System document will ensure that all vessel system units including secondary containment structural support and backfill placement comply with the applicable documents.</p>

Information Assessed		Source of Information	Assessment
Infiltration	The design or operation (e.g., diking & curbing) prevents run-on or infiltration of precipitation into the Secondary Containment system unless the collection system has sufficient excess capacity (25 yr rainfall) to contain the run-on precipitation.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 1O, Basis of Design; 24590-LAW-PER-M-02-002, Rev. 6, Flooding Volume for LAW Facility (Calculations); 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design.	The Basis of Design document requires that secondary containment structure shall be capable to contain 100% liquid volume of the largest tank in the group of tanks plus the precipitation from a 25-year, 24-hour rainfall event. The secondary containment cell L-B001B is located inside the LAW facility where it is protected from direct precipitation by the building structure as shown in the general arrangement drawings, therefore, will not be subjected to precipitation effects. Since the vessel (RLD-VSL-00004) is completely enclosed inside the secondary containment structure (cell L-B001B), therefore, 100% liquid volume containment requirement is automatically satisfied. The Flooding Volume and Secondary Containment Design documents show that the entire cell floor and walls up to a height of 9'-6" are also lined with stainless steel plate which further ensures containment of the entire volume of RLD-VSL-00004 vessel.

Information Assessed		Source of Information	Assessment
Infiltration (cont'd)	The design includes an external moisture barrier or other means to prevent moisture from entering the room.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 1O, Basis of Design; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.	The Basis of Design document requires the design include provisions to prevent external moisture intrusion. The secondary containment cell L-B001B shown in the general arrangement drawings is located inside the LAW building which shields it from precipitation and surface water percolation. As noted in the Basis of Design document, the ground water table is located about 250 feet below the ground surface, therefore, ground water infiltration is precluded. However, as a good engineering practice, the drawings show that the secondary containment structure has the bituminous damp-proofing material applied to the external faces of its concrete walls which also mitigates moisture infiltration. The drawings also show stainless steel liner plate installed at the inside face of the cell walls and floor which provide added measure to prevent moisture from entering the cell. The Engineering Specifications for Stainless Steel Liner Plates provide adequate testing and inspection details to ensure quality installation.

Information Assessed		Source of Information	Assessment
Liner System	The containment area is free of cracks or gaps and the design discusses methods of their minimization.	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.</p>	<p>The Basis of Design document requires the liner system to be installed must be free of deficiencies such as cracks and gaps and its installation should be inspected and documented by an independent qualified installation inspector or independent qualified professional engineer trained and experienced in installation of tank systems. The Secondary Containment Design document provides current adequate design requirements and codes and standards to design leak tight stainless steel liners. This document includes appropriate details for installation of stainless steel liners free of cracks and gaps. The procurement specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates provides adequate requirements and standards for furnishing stainless steel liners free of cracks and gaps. The design drawings and Secondary Containment Design document show the liner installation details. The installation completion, testing and examination techniques, and inspection requirements per Engineering Specification document further ensure their quality installation.</p>
	The design has considered the compatibility of the concrete liner or coatings and waste and presents information on coatings planning to be used from the manufacturer addressing compatibility with the stored waste. The lining or coating must prevent the waste from migrating into the concrete.	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design.</p>	<p>The Material Selections document contains general information on the compatibility of planned secondary containment stainless steel liners with the waste. The drawings and Secondary Containment Design document provide standard installation details for liners that will ensure leak-tight liners which will prevent the migration of the waste into the concrete.</p>

	Information Assessed	Source of Information	Assessment
Design	Description of subsurface conditions and soil bearing capacity are adequate.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; WTSC99-1036-42-17, RPP-WTP Final Report Geotechnical Investigation, Shannon & Wilson Inc. (H-1616-51), May 2000; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services.	The Structural Design Criteria provides adequate design guidance for both mat and spread footings based on the Geotechnical Investigation report for the facility. Bearing capacity and settlement design parameters are presented for the dense Hanford Upper and Lower Sand Units and Structural Fill. Use of the loose wind blown (dune) sands for foundations is precluded. The Specification for Excavation and Backfill provides structural backfill requirements based on the geotechnical report and current codes and standards for the selection, placing, compacting, and backfill testing of candidate fill materials and completed backfills. The Specification for Material Testing Services provides current adequate codes and standards for testing of the candidate structural fill materials, and in-situ testing of structural fills as they are placed. The secondary containment cells L-0123, L-0124, and L-0126 are at located at Elev. 3'-0" level inside the building; the subsurface and soil related items do not directly associate with them but do have an overall effect on their structural strength from the foundations below at Elev. (-) 21'-0" which have been appropriately addressed in the section above at Elev. (-) 21'-0".

Information Assessed		Source of Information	Assessment
Design (cont'd)	Foundation design loads (including full tanks) and estimated settlement are adequately considered.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ASCE 7-98, Minimum Design Loads for Buildings and Other Structures; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; ACI 349-01, Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary; 24590-LAW-DBC-S13T-00015, Rev. B, Elevated Slab Design + 3 ft. (Calculations); 24590-LAW-SSC-S15T-00023, Rev. A, Process Cell Steel Framing (Calculations); 24590-WTP-3DP-G04B-00037, Rev. 15B, Engineering Calculations.	The Structural Design Criteria uses current adequate standards to define design loads and load combinations (ASCE 7-98, ACI 318-99, and ACI 349-01). Dead and fluid loads are included in these loads and load combinations. Settlement design parameters are included in the Structural Design Criteria (Section 7.7, Geotechnical Design Parameters and Foundation Design). The secondary containment cells identified herein (L-0123, L-0124, and L-0126) are located inside the building at Elev. 3'-0" level. The subsurface and soil related items such as settlement do not directly associate with them but do have an overall effect on their structural strength from the foundation below at Elev. (-) 21'-0", which has been addressed in the previous section above. However, the review of the design calculations of the immediate slab and steel framing members that support the vessels and liners located on the floor in the subject process cells (L-0123, L-0124, and L-0126) show that full weights of the vessels have been appropriately considered. The methodology described in the Engineering Calculations document assures that the final secondary containment structure is designed to comply with all applicable requirements.
	Design calculation approach and design basis of footings with design standard references (e.g., ACI) are adequate.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary. 24590-LAW-DBC-S13T-00015, Rev. B, Elevated Slab Design + 3 ft. (Calculations); 24590-LAW-SSC-S15T-00023, Rev. A, Process Cell Steel Framing (Calculations).	The Basis of Design provides many fundamental general requirements for footing design. The Structural Design Criteria document references current adequate detailed design criteria for the design of concrete foundations and footings. ACI 318-99 is referenced for the strength design of secondary structures. The design calculations reviewed show that these codes and standards have been appropriately invoked in the design process for the secondary containment cells footings.

Information Assessed		Source of Information	Assessment
Foundation Design	Foundation material is compatible with the soil.	24590-WTP-3PS-DB01-T0001, Rev. 8, Engineering Specification for Furnishing and Delivering Ready-Mix Concrete; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.	The specification for Furnishing and Delivering Ready-Mix Concrete provides adequate current requirements for the selection of coarse and fine aggregates, and the procurement of cementitious materials. The specification for Material Testing Services provides adequate test procedures for testing the candidate aggregates to ensure adequate concrete durability. As noted in the Basis of Design document (Section 4.7), the groundwater table is more than 250 feet below the ground surface; therefore, no compatibility problem is expected between the concrete foundation and the surrounding backfill materials used under and around it. The secondary containment cells identified herein (L-0123, L-0124, and L-0126) are located inside the building at Elev. 3'-0" level. The subsurface and soil related items such as settlement do not directly associate with them but do have an overall effect on their structural strength from the foundation below at Elev. (-) 21'-0", which has been addressed in the previous section above.
	Foundation will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.	The Structural Design Criteria requires all structural foundations for outdoor components to extend below the 30" frost line from the finished grade (Elev. 0'-0"). The secondary containment cells L-0123, L-0124, and L-0126 are located inside the building at Elev. 3'-0", therefore, they are not subjected to the detrimental effects of frost heave.

Information Assessed		Source of Information	Assessment
Seismic	Seismic considerations have been adequately addressed.	<p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-WTP-PSAR-ESH-01-002-03, Rev. 4I, Preliminary Documented Safety Analysis to Support Construction Authorization: LAW Facility Specific Information;</p> <p>24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria;</p> <p>UBC 1997, Uniform Building Code;</p> <p>ACI 318-99, Building Code Requirements for Structural Concrete and Commentary;</p> <p>AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition;</p> <p>24590-LAW-DBC-S13T-00015, Rev. B, Elevated Slab Design + 3 ft. (Calculations);</p> <p>24590-LAW-SSC-S15T-00023, Rev. A, Process Cell Steel Framing (Calculations).</p>	<p>The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The LAW Facility PDSA document shows that the cells in this integrity assessment to be Seismic Category-III (SC-III) components. The Structural Design Criteria document provides detailed discipline specific codes and standards for the design of SC-III LAW secondary containment foundations, structures, and liners by the design engineers. Design loads and analysis methods for SC-III secondary containments and liners are taken from the Uniform Building Code (UBC 1997). The ACI 318-99 code provides the design requirements and load combinations for the design of the secondary containment reinforced concrete foundations and structures. The AISC M016-89 code is used for the design of SC-III secondary containment stainless steel liners and building structural steel. The above listed code and standards adequately address the consideration of the requirements of the applicable seismic loads. Review of the design calculations show that the seismic loads have been appropriately considered in the design process of the secondary containment elements.</p>

Information Assessed		Source of Information	Assessment
Compatibility	The stored waste is compatible with its Secondary Containment and leak detection hardware based on a detailed chemical and physical analysis of the wastes used and other information sources.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-J-02-001, Rev. 4, Leak Detection – Sump Level Measurement in Secondary Containment Systems; 24590-LAW-PER-M-02-002, Rev. 6, Flooding Volume for LAW Facility; 24590-LAW-PER-M-02-001, Rev. 5, LAW Facility Sump Data.	The Basis of Design document states that the secondary containment cells are to be appropriately lined and any leaks or spills will be removed within 24 hours of a leak detection or in as timely a manner as possible. Based on a detailed chemical and physical analysis of the wastes and other process information sources, the Material Selections document identifies appropriate corrosion resistant materials for secondary containment liners, and leak detection hardware. The Secondary Containment Design document provides adequate typical construction details for liners as well as vessel anchorage details, sumps, and leak detection equipment to be used for secondary containment where required. The typical details are furnished for leak detection/sump level measurement systems equipment in the Leak Detection-Sump Level Measurement document. The Flooding Volume and LAW Facility Sump Data documents provide compatible liner material and other applicable installation details for the secondary containment cell structures.

Information Assessed		Source of Information	Assessment
Strength	The design shows that the Secondary Containment has sufficient strength and thickness to prevent failure owing to pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stress of daily operations (e.g., vehicular traffic).	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-LAW-DBC-S13T-00015, Rev. B, Elevated Slab Design + 3 ft. (Calculations);</p> <p>24590-LAW-DBC-S13T-00023, Rev. A, Upper Process Shearwall Design, (Calculations);</p> <p>24590-LAW-SSC-S15T-00023, Rev. A, Process Cell Steel Framing (Calculations).</p>	<p>The LAW general arrangement drawings show the location of the secondary containment cells (L-0123, L-0124, and L-0126) at floor elevation 3'-0" in the building. Pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stresses of daily operations are adequately stated as design goals in the Basis of Design document. The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The secondary containment cells being considered are located inside the LAW Vitrification Building, therefore, climatic condition or vehicular traffic are not considered applicable load cases. However, daily operational loads, static head, and pressure gradient due to liquid release inside the cells are considered adequately in the design calculations which show that the secondary containment cells have sufficient strength to prevent their failure.</p>

	Information Assessed	Source of Information	Assessment
Strength (cont'd)	The Secondary Containment system has sufficient strength in the presence of operational stresses from site-specific conditions (i.e., traffic, heavy equipment, precipitation, frost).	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection;</p> <p>24590-LAW-DBC-S13T-00015, Rev. B, Elevated Slab Design + 3 ft. (Calculations);</p> <p>24590-LAW-DBC-S13T-00023, Rev. A, Upper Process Shearwall Design, (Calculations);</p> <p>24590-LAW-SSC-S15T-00023, Rev. A, Process Cell Steel Framing (Calculations).</p>	<p>The LAW facility drawings show secondary containment cells being considered are located inside the building at Elev. 3'-0". Because they are located inside the building, traffic, heavy equipment, precipitation, and frost are not applicable load cases. The Secondary Containment Design document identifies the applicable load cases including operational stresses from site specific conditions that must be considered in the design. The Engineering Specification for Furnishing Stainless Steel Liner Plates includes specific provisions for protection of and repair of completed liners during the construction process. The Material Selections for Building Secondary Containment document addresses the potential effects of operations conditions on steel liner integrity and the associated maintenance requirements. The requirements identified in the above listed documents adequately address the site-specific conditions and the review of the design calculations also shows that secondary containment cells have sufficient strength to sustain the applicable loading conditions.</p>

**IQRPE Structural Integrity Assessment Report for LAW
Secondary Containment @ Floor Elev. 3'-0"**

IA-3002605-000

Information Assessed		Source of Information	Assessment
Foundation Integrity	The Secondary Containment is properly supported by a foundation or base in order to prevent failure from settlement, compression, or uplift, including the residual effects of installation.	24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.	Settlement, compression, or uplift including the residual effects of installation, are addressed in the Secondary Containment Design document and the Structural Design Criteria. The design requirements and codes and standards specified in these documents are adequate to satisfy these performance goals. The subject secondary containment cells L-0123, L-0124, and L-0126 are located at floor Elev. + 3'-0" which are not directly subjected to foundation settlement, compression or uplift including residual effects. Their effect has been appropriately considered on the foundation of the structures at Elev. (-) 21'-0" which support the subject secondary containment elements. It is contained in the section above for Elev. (-) 21'-0" level.
	The placement, structural support, and type of material used for backfill around and below the Secondary Containment are appropriate.	Drawings listed above under References; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services.	The LAW facility drawings show the secondary containment being considered are located inside the building. Because the subject cells L-0123, L-0124, and L-0126 are located inside the building at Elev. 3'-0", the backfill material requirements are not applicable. However, the design requirements for foundations and structure that support the secondary containment components are adequately addressed in the Structural Design Criteria, Excavation and Backfill, and Material Testing documents. These documents contain adequate industry standards for designing, selecting and testing fill materials, placing and compacting backfills, and testing to ensure adequate compaction below and around the foundations of the structures. The foundations evaluation is included above in the section for Elev. (-) 21'-0".

	Information Assessed	Source of Information	Assessment
Infiltration	<p>The design or operation (e.g., diking & curbing) prevents run-on or infiltration of precipitation into the Secondary Containment system unless the collection system has sufficient excess capacity (25 yr rainfall) to contain the run-on precipitation.</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1O, Basis of Design; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.</p>	<p>The Basis of Design document requires the design to provide adequate measures to prevent run-on or infiltration of precipitation. The secondary containment cell components are located inside the LAW Vittrification Building where they are protected from the direct precipitation by the building structure as shown in the general arrangement drawings, therefore, run-on precipitation is precluded. The drawings also show stainless steel liner plate installed at the inside face of all cell walls and floor which provide added measure to prevent moisture from entering the cells. The Engineering Specifications for Stainless Steel Liner Plates provide adequate testing and inspection details to ensure quality installation.</p>
	<p>The design includes an external moisture barrier or other means to prevent moisture from entering the room.</p>	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1O, Basis of Design; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.</p>	<p>The Basis of Design document requires the design include provisions to prevent external moisture intrusion. The secondary containment cells L-0123, L-0124, and L-0126 shown in the general arrangement drawings are located inside the LAW building which shields them from precipitation and surface water percolation, therefore, ground water infiltration is precluded. The drawings also show stainless steel liner plate installed at the inside face of all cell walls and floor which provide added measure to prevent moisture from entering the cells. The Engineering Specifications for Stainless Steel Liner Plates provide adequate testing and inspection details to ensure quality installation.</p>

Information Assessed		Source of Information	Assessment
Liner System	The containment area is free of cracks or gaps and the design discusses methods of their minimization.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.	The Basis of Design document requires the liner system to be installed must be free of deficiencies such as cracks and gaps and its installation should be inspected and documented by an independent qualified installation inspector or independent qualified professional engineer trained and experienced in installation of tank systems. The Secondary Containment Design document provides current adequate design requirements and codes and standards to design leak tight liners. This document includes appropriate details for installation of stainless steel liners to be free of cracks and gaps. The Material Selections and Stainless Steel Liner Plates documents provide adequate requirements for the secondary containment liners.
	The design has considered the compatibility of the concrete liner or coatings and waste and presents information on coatings planning to be used from the manufacturer addressing compatibility with the stored waste. The lining or coating must prevent the waste from migrating into the concrete.	24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-3PS-NLLR-T0002, Rev. 1, Engineering Specification for Furnishing, Detailing, Fabrication, Delivery and Installation of Stainless Steel Liner Plates.	The Material Selections and Special Protective Coating documents contain general information on the compatibility of planned secondary containment stainless steel liners (SST) with the waste. The SST lining material used in cells L-0123, L-0124, and L-0126 prevent the waste from migrating into the concrete. The Secondary Containment Design and Stainless Steel Liners documents provide standard installation details for liners that will ensure leak-tight liners that prevent the migration of the waste into the concrete.

Information Assessed		Source of Information	Assessment
Design	Description of subsurface conditions and soil bearing capacity are adequate.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; WTSC99-1036-42-17, RPP-WTP Final Report Geotechnical Investigation, Shannon & Wilson Inc. (H-1616-51), May 2000; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4 Engineering Specification for Material Testing Services.	The Structural Design Criteria provides adequate design guidance for both mat and spread footings based on the Geotechnical Investigation report for the facility. Bearing capacity and settlement design parameters are presented for the dense Hanford Upper and Lower Sand Units and Structural Fill. Use of the loose wind blown (dune) sands for foundations is precluded. The Specification for Excavation and Backfill provides structural backfill requirements based on the geotechnical report and current codes and standards for the selection, placing, compacting, and backfill testing of candidate fill materials and completed backfills. The Specification for Material Testing Services provides current adequate codes and standards for testing of the candidate structural fill materials, and in-situ testing of structural fills as they are placed. Room L-0218 identified in the scope is at Elev. 28'-0" level inside the building; the subsurface and soil related items do not directly associate with it but do have an overall effect on its structural strength from the foundation below at Elev. (-) 21'-0" which has been discussed in the section above.

Information Assessed		Source of Information	Assessment
Design (cont'd)	Foundation design loads (including full tanks) and estimated settlement are adequately considered.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ASCE 7-98, Minimum Design Loads for Buildings and Other Structures; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; ACI 349-01, Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary; 24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations); 24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0"; 24590-WTP-3DP-G04B-00037, Rev. 15B, Engineering Calculations.	The Structural Design Criteria uses current adequate standards to define design loads and load combinations (ASCE 7-98, ACI 318-99, and ACI 349-01). Dead and fluid loads are included in these loads and load combinations. Settlement design parameters are included in the Structural Design Criteria (Section 7.7, Geotechnical Design Parameters and Foundation Design). The secondary containment room L-0218 is located at Elev. 28'-0" level inside the building. The subsurface and soil related items do not directly associate with it but do have an overall effect on its structural strength from the foundation below. However, the review of the design calculations of the immediate slab and steel framing members which support the secondary containment structure, equipment, and coatings around tank (LVP-TK-00001) located on the floor in the subject room (L-0218) show that appropriate design loads including full weight of the tank have been considered. The methodology described in the Engineering Calculations document assures that the final secondary containment structure is designed to comply with all applicable requirements.

**IQRPE Structural Integrity Assessment Report for LAW
Secondary Containment @ Floor Elev. 28'-0"**

IA-3002605-000

Information Assessed		Source of Information	Assessment
Design (cont'd)	Design calculation approach and design basis of footings with design standard references (e.g., ACI) are adequate.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; AISC M016-89, Manual of Steel Construction, Allowable Stress Design, Ninth Edition; 24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations); 24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0".	The Basis of Design provides many fundamental general requirements for footing design. The Structural Design Criteria document references current adequate detailed design criteria for the design of concrete foundations and footings. ACI 318-99 is referenced for the strength design of the concrete structures and AISC M016-89 for the structural steel framing elements of the facility. The design calculations reviewed show that the approach and basis used for design are adequately utilized per the required codes and standards and the requirements have been appropriately met in the design process of the secondary containment room footings.
Foundation Design	Foundation material is compatible with the soil.	24590-WTP-3PS-DB01-T0001, Rev. 8, Engineering Specification for Furnishing and Delivering Ready-Mix Concrete; 24590-BOF-3PS-C000-T0001, Rev. 4 Engineering Specification for Material Testing Services.	The specification for Furnishing and Delivering Ready-Mix Concrete provides adequate current requirements for the selection of coarse and fine aggregates, and the procurement of cementitious materials. The specification for Material Testing Services provides adequate test procedures for testing the candidate aggregates to ensure adequate concrete durability. The secondary containment room L-0218 is located at Elev. 28'-0" level inside the building. The subsurface and soil related items do not directly associate with it but do have an overall effect on its structural elements from the foundations below which has been appropriately addressed above in section at Elev. (-) 21'-0".

Information Assessed		Source of Information	Assessment
Foundation Design (cont'd)	Foundation will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.	The Structural Design Criteria requires all structural foundations for outdoor components to extend below the 30" frost line from the finished grade (Elev. 0'-0"). Room L-0218 is located inside the building at Elev. 28'-0", therefore, it is not subjected to the detrimental effects of frost heave.
Seismic	Seismic considerations have been adequately addressed.	24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PSAR-ESH-01-002-03, Rev. 4I, Preliminary Documented Safety Analysis to Support Construction Authorization: LAW Facility Specific Information; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; UBC 1997, Uniform Building Code; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition; 24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations); 24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0".	The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The LAW Facility PDSA document shows the room in this integrity assessment to be Seismic Category-III (SC-III) component. The Structural Design Criteria document provides detailed discipline specific codes and standards for the design of SC-III LAW secondary containment foundations, structures, and liners by the design engineers. Design loads and analysis methods for SC-III secondary containments and liners are taken from the Uniform Building Code (UBC 1997). The ACI 318-99 code provides the design requirements and load combinations for the design of the secondary containment reinforced concrete foundations and structures. The AISC M016-89 code is used for the design of SC-III secondary containment stainless steel liners and building structural steel. The above listed code and standards adequately address the consideration of the requirements of the applicable seismic loads. Review of the design calculations show that the seismic loads have been appropriately considered in the design process of the secondary containment elements.

Information Assessed		Source of Information	Assessment
Compatibility	The stored waste is compatible with its Secondary Containment and leak detection hardware based on a detailed chemical and physical analysis of the wastes used and other information sources.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-J-02-001, Rev. 4, Leak Detection – Sump Level Measurement in Secondary Containment Systems; 24590-LAW-PER-M-02-002, Rev. 6, Flooding Volume for LAW Facility; 24590-LAW-PER-M-02-001, Rev. 5, LAW Facility Sump Data.	The Basis of Design document states that the secondary containment rooms are to be appropriately lined and any leaks or spills will be removed within 24 hours of a leak detection or in as timely a manner as possible. Based on a detailed chemical and physical analysis of the wastes and other process information sources, the Material Selections document identifies appropriate corrosion resistant materials for secondary containment special protective coatings and leak detection hardware. The Secondary Containment Design document provides adequate typical construction details for special protective coatings including tank anchorage details, sumps, and leak detection equipment to be used for secondary containment where required. The typical details are furnished for leak detection/sump level measurement systems equipment in the Leak Detection - Sump Level Measurement document. The Flooding Volume and LAW Facility Sump Data documents provide compatible liner material and other applicable installation details for the secondary containment room structures.

Information Assessed		Source of Information	Assessment
Strength	The design shows that the Secondary Containment has sufficient strength and thickness to prevent failure owing to pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stress of daily operations (e.g., vehicular traffic).	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations); 24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0".	The LAW general arrangement drawings show the location of the secondary containment room L-0218 in the building. Pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stresses of daily operations are adequately stated as design goals in the Basis of Design document. The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The secondary containment room L-0218 being considered is located inside the LAW Vitrification Building, therefore, vehicular traffic is not considered an applicable load case. However, daily operational loads, static head, and pressure gradient due to liquid release inside the secondary containment room walls are considered adequately in the design calculations which show that the secondary containment has sufficient strength to prevent its failure.

Information Assessed		Source of Information	Assessment
Strength (cont'd)	The Secondary Containment system has sufficient strength in the presence of operational stresses from site-specific conditions (i.e., traffic, heavy equipment, precipitation, frost).	<p>Drawings listed above under References;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas;</p> <p>24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection.</p> <p>24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations);</p> <p>24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0".</p>	<p>The LAW facility drawings show secondary containment room L-0218 being considered is located inside the building. Because it is located inside the building, traffic, heavy equipment, precipitation and frost are not applicable load cases. The Secondary Containment Design document identifies the applicable load cases (operational stresses) from site specific conditions that must be considered in the design. The Engineering Specification for Field Applied Special Protective Coating includes specific provisions for protection of and repair of completed special protective coating material. The Material Selections for Building Secondary Containment document addresses the potential effects of operations conditions on special protective coating integrity and the associated maintenance requirements. Daily operational loads, static head, and pressure gradient due to liquid release inside the secondary containment room are considered adequately in the design calculations which show that it has sufficient strength to sustain the applicable loads.</p>

Information Assessed		Source of Information	Assessment
Foundation Integrity	The Secondary Containment is properly supported by a foundation or base in order to prevent failure from settlement, compression, or uplift, including the residual effects of installation.	24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; 24590-LAW-SSC-S15T-00032, Rev. A, Steel Framing Elevation +28' Non Process and Effluent Cells (Calculations); 24590-LAW-DBC-S13T-00028, Rev. A, Elevated Floor Slab Design @ El. +28'-0".	Settlement, compression, or uplift including the residual effects of installation, are addressed in the Secondary Containment Design document and the Structural Design Criteria. The requirements identified in the codes and standards specified in these design documents are adequate to satisfy the performance goals. The subject secondary containment room L-0218 is located at floor Elev. 28'-0" which is not directly subjected to foundation settlement, compression or uplift including residual effects. Their effect has been appropriately considered on the foundation of the structures at Elev. (-) 21'-0" which support the subject secondary containment elements. It is contained in the section above for Elev. (-) 21'-0" level.
	The placement, structural support, and type of material used for backfill around and below the Secondary Containment are appropriate.	Drawings listed above under References; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services.	The LAW facility drawings show the secondary containment room L-0218 being considered is located inside the building at Elev. 28'-0". Because the subject room is located at Elev. 28'-0", the backfill material requirements are not applicable. However, the design requirements for foundations and structure that support the secondary containment components are adequately addressed in the Structural Design Criteria, Excavation and Backfill, and Material Testing documents. These documents contain adequate industry standards for designing, selecting and testing fill materials, placing and compacting backfills, and testing to ensure adequate compaction below and around the foundations of the structures. The foundations evaluation is included above in the section for Elev. (-) 21'-0" level.

Information Assessed		Source of Information	Assessment
Infiltration	The design or operation (e.g., diking & curbing) prevents run-on or infiltration of precipitation into the Secondary Containment system unless the collection system has sufficient excess capacity (25 yr rainfall) to contain the run-on precipitation.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.	The Basis of Design document requires the design to provide adequate measures to prevent run-on or infiltration of precipitation. The secondary containment room L-0218 is located inside the LAW Vitrification Building where it is protected from direct precipitation by the building structure as shown in the general arrangement drawings, therefore, this requirement does not apply.
	The design includes an external moisture barrier or other means to prevent moisture from entering the room.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.	The Basis of Design document requires the design to include provisions to prevent external moisture intrusion. The secondary containment room L-0218 shown in the general arrangement drawings is inside the LAW Vitrification Building which shields it from precipitation and surface water percolation, therefore, this requirement does not apply to this secondary containment.

Information Assessed		Source of Information	Assessment
Liner System	The containment area is free of cracks or gaps and the design discusses methods of their minimization.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas.	The Basis of Design document requires the liner system to be installed must be free of deficiencies such as cracks and gaps and its installation should be inspected and documented by an independent qualified installation inspector or independent qualified professional engineer trained and experienced in installation of tank systems. The Secondary Containment Design document provides current adequate design requirements, and codes and standards to design leak tight liners. This document includes appropriate details for installation of the special protective coatings free of cracks and gaps. The Material Selections and Special Protective Coatings documents provide adequate requirements for the secondary containment protective coating material.
	The design has considered the compatibility of the concrete liner or coatings and waste and presents information on coatings planning to be used from the manufacturer addressing compatibility with the stored waste. The lining or coating must prevent the waste from migrating into the concrete.	24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas; 24590-LAW-PER-M-02-002, Rev. 6, Flooding Volume for LAW Facility.	The Material Selections and Special Protective Coating documents contain general information on the compatibility of planned secondary containment special protective coatings with the waste. The secondary containment room L-0218 has special protective coating applied to the floor and its containment walls. The Flooding Volume document provides the height of the secondary containment wall. The Secondary Containment Design and Special Protective Coatings documents provide standard installation details for the special protective coatings. Surface preparations and applicable details such as corner coving on floor/wall and wall/wall joints as described and/or shown in the aforementioned documents will ensure leak-tight protective coating layer that will stop the migration of the waste into the concrete.

Information Assessed		Source of Information	Assessment
Design	Description of subsurface conditions and soil bearing capacity are adequate.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; WTSC99-1036-42-17, RPP-WTP Final Report Geotechnical Investigation, Shannon & Wilson Inc. (H-1616-51), May 2000; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4 Engineering Specification for Material Testing Services.	The Structural Design Criteria provides adequate design guidance for both mat and spread footings based on the Geotechnical Investigation report for the facility. Bearing capacity and settlement design parameters are presented for the dense Hanford Upper and Lower Sand Units and Structural Fill. Use of the loose wind blown (dune) sands for foundations is precluded. The Specification for Excavation and Backfill provides structural backfill requirements based on the geotechnical report and current codes and standards for the selection, placing, compacting, and backfill testing of candidate fill materials and completed backfills. The Specification for Material Testing Services provides current adequate codes and standards for testing of the candidate structural fill materials, and in-situ testing of structural fills as they are placed. Room L-0304F identified in the scope is located at Elev. 48'-0" level inside the building. The subsurface and soil related items do not directly associate with it but do have an overall effect on its structural strength from the foundation below at Elev. (-) 21'-0" which has been discussed in the section above.

Information Assessed		Source of Information	Assessment
Design (cont'd)	Foundation design loads (including full tanks) and estimated settlement are adequately considered.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ASCE 7-98, Minimum Design Loads for Buildings and Other Structures; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; ACI 349-01, Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary; 24590-LAW-DBC-S13T-00034, Rev. A, Elevated Floor Slab Design @ +48'-0" (Calculations); 24590-LAW-SSC-S15T-00049, Rev. A, Steel Framing at EL. +48' (Calculations); 24590-WTP-3DP-G04B-00037, Rev. 15B, Engineering Calculations.	The Structural Design Criteria uses current adequate standards to define design loads and load combinations (ASCE 7-98, ACI 318-99, and ACI 349-01). Dead and fluid loads are included in these loads and load combinations. Settlement design parameters are included in the Structural Design Criteria (Section 7.7, Geotechnical Design Parameters and Foundation Design). The room L-0304F identified in the scope is located at Elev. 48'-0" level inside the building. The subsurface and soil related items do not directly associate with it but do have an overall effect on its structural strength from the foundation below. However, the review of the design calculations of the immediate slab and steel framing members that support the scrubber (LVP-SCB-00001) located on the floor in the bermed section of room (L-0304F) show that full weight of the scrubber has been appropriately considered. The methodology described in the Engineering Calculations document assures that the final secondary containment structure is designed to comply with all applicable requirements.
	Design calculation approach and design basis of footings with design standard references (e.g., ACI) are adequate.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; AISC M016-89, Manual of Steel Construction, Allowable Stress Design, Ninth Edition; 24590-LAW-DBC-S13T-00034, Rev. A, Elevated Floor Slab Design @ +48'-0" (Calculations); 24590-LAW-SSC-S15T-00049, Rev. A, Steel Framing at EL. +48' (Calculations).	The Basis of Design provides many fundamental general requirements for footing design. The Structural Design Criteria document references current adequate detailed design criteria for the design of concrete foundations and footings. ACI 318-99 is referenced for the strength design of the concrete structures and AISC M016-89 for the structural steel framing elements of the facility. The design calculations reviewed show that the approach and basis used for design are adequately utilized per the required codes and standards and the requirements have been appropriately met in the design process of the secondary containment room footings.

Information Assessed		Source of Information	Assessment
Foundation Design	Foundation material is compatible with the soil.	24590-WTP-3PS-DB01-T0001, Rev. 8, Engineering Specification for Furnishing and Delivering Ready-Mix Concrete; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services.	The specification for Furnishing and Delivering Ready-Mix Concrete provides adequate current requirements for the selection of coarse and fine aggregates, and the procurement of cementitious materials. The specification for Material Testing Services provides adequate test procedures for testing the candidate aggregates to ensure adequate concrete durability. The room L-0304F identified in the scope is located at Elev. 48'-0" level inside the building. The subsurface and soil related items do not directly associate with it but do have an overall effect on its structural elements from the foundations below which has been appropriately addressed in the section above for Elev.(-) 21'-0" level.
	Foundation will withstand the effects of frost heave.	24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.	The Structural Design Criteria requires all structural foundations for outdoor components to extend below the 30" frost line from the finished grade (Elev. 0'-0"). Room L-0304F is located inside the building at Elev. 48'-0", therefore, it is not subjected to the detrimental effects of the frost heave.

	Information Assessed	Source of Information	Assessment
Seismic	Seismic considerations have been adequately addressed.	<p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PSAR-ESH-01-002-03, Rev. 4I, Preliminary Documented Safety Analysis to Support Construction Authorization: LAW Facility Specific Information; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; UBC 1997, Uniform Building Code; ACI 318-99, Building Code Requirements for Structural Concrete and Commentary; AISC M016-89, Manual of Steel Construction - Allowable Stress Design, Ninth Edition; 24590-LAW-DBC-S13T-00034, Rev. A, Elevated Floor Slab Design @ +48'-0" (Calculations); 24590-LAW-SSC-S15T-00049, Rev. A, Steel Framing at EL. +48' (Calculations).</p>	<p>The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The LAW Facility PDSA document shows the room in this integrity assessment to be Seismic Category-III (SC-III) components. The Structural Design Criteria document provides detailed discipline specific codes and standards for the design of SC-III LAW secondary containment foundations, structures, and liners by the design engineers. Design loads and analysis methods for SC-III secondary containments and liners are taken from the Uniform Building Code (UBC 1997). The ACI 318-99 code provides the design requirements and load combinations for the design of the secondary containment reinforced concrete foundations and structures. The AISC M016-89 code is used for the design of SC-III secondary containment structural steel elements. The above listed code and standards adequately address the consideration of the requirements of the applicable seismic loads. Review of the design calculations show that the seismic loads have been appropriately considered in the design process of the secondary containment elements.</p>

Information Assessed		Source of Information	Assessment
Compatibility	The stored waste is compatible with its Secondary Containment and leak detection hardware based on a detailed chemical and physical analysis of the wastes used and other information sources.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design.	The Basis of Design document states that the secondary containment rooms are to be appropriately lined and any leaks or spills will be removed within 24 hours of a leak detection or in as timely a manner as possible. Based on a detailed chemical and physical analysis of the wastes and other process information sources, the Material Selections document identifies appropriate corrosion resistant materials for secondary containment liners, special protective coatings, and leak detection hardware. The Secondary Containment Design document provides adequate typical construction details for liners including tank anchorage details, special protective coatings, sumps, and leak detection equipment to be used for secondary containment where required. The subject room L-0304F at floor Elev. 48'-0" directly drains through the floor drain into the Caustic Collection Tank (LVP-TK-00001) located at the lower floor Elev. 28'-0." Room L-0304F floor and its 4" high concrete curb are coated with special protective coating material. The Material Selections document states that special protective coatings are acceptable where human access is allowed for performing maintenance.

Information Assessed		Source of Information	Assessment
Strength	The design shows that the Secondary Containment has sufficient strength and thickness to prevent failure owing to pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stress of daily operations (e.g., vehicular traffic).	<p>Drawings listed above under References;</p> <p>24590-WTP-DB-ENG-01-001, Rev. 1O, Basis of Design;</p> <p>24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design;</p> <p>24590-LAW-DBC-S13T-00034, Rev. A, Elevated Floor Slab Design @ +48'-0" (Calculations);</p> <p>24590-LAW-SSC-S15T-00049, Rev. A, Steel Framing at EL. +48' (Calculations).</p>	<p>The LAW general arrangement drawings show the location of the secondary containment room in the building.</p> <p>Pressure gradients, static head during a release, physical contact with the waste, climatic conditions, and the stresses of daily operations are adequately stated as design goals in the Basis of Design document. The Secondary Containment Design document describes and provides references for the design methodology, materials, loads, and load combinations (including seismic loads) for the LAW facility secondary containment components. The secondary containment room L-0304F being considered is located in inside the LAW Vitrification Building, therefore, pressure gradients and vehicular traffic are not considered applicable load cases. However, normal daily operational loads are adequately considered in the design calculations which show that the secondary containment room has sufficient strength to prevent its failure.</p>

	Information Assessed	Source of Information	Assessment
Strength (cont'd)	The Secondary Containment system has sufficient strength in the presence of operational stresses from site-specific conditions (i.e., traffic, heavy equipment, precipitation, frost).	Drawings listed above under References; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-LAW-DBC-S13T-00034, Rev. A, Elevated Floor Slab Design @ +48'-0" (Calculations); 24590-LAW-SSC-S15T-00049, Rev. A, Steel Framing at EL. +48' (Calculations).	The LAW facility drawings show secondary containment room L-0304F being considered is located inside the building. Because it is located inside the building, traffic, heavy equipment, precipitation and frost are not applicable load cases. The Secondary Containment Design document identifies the applicable load cases (operational stresses) from site specific conditions that must be considered in the design. The Special Protective Coatings document includes specific provisions and details for installation and protection and repair of the completed protective coating. The Material Selections for Building Secondary Containment document addresses the potential effects of operations conditions on special protective coating integrity and the associated maintenance requirements. Daily normal operational loads are adequately considered in the design calculations which show that it has sufficient strength to sustain the applicable loads.
Foundation Integrity	The Secondary Containment is properly supported by a foundation or base in order to prevent failure from settlement, compression, or uplift, including the residual effects of installation.	24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria.	Settlement, compression, or uplift including the residual effects of installation, are addressed in the Secondary Containment Design document and the Structural Design Criteria. The design requirements and codes and standards specified in these documents are adequate to satisfy the performance goals. The subject secondary containment room L-0304F is located at floor Elev. + 48'-0" which is not directly subjected to foundation settlement, compression or uplift including residual effects. Their effect has been appropriately considered on the foundation of the structures at Elev. (-) 21'-0" which support the subject secondary containment elements. It is contained in the section above for Elev. (-) 21'-0" level.

Information Assessed		Source of Information	Assessment
Foundation Integrity (cont'd)	The placement, structural support, and type of material used for backfill around and below the Secondary Containment are appropriate.	Drawings listed above under References; 24590-WTP-DC-ST-01-001, Rev. 12, Structural Design Criteria; 24590-BOF-3PS-CE01-T0001, Rev. 6, Engineering Specification for Excavation and Backfill; 24590-BOF-3PS-C000-T0001, Rev. 4, Engineering Specification for Material Testing Services.	The LAW facility drawings show the secondary containment room L-0304F being considered is located inside the building. Because the subject room L-0304F is located inside the building at Elev. 48'-0", the backfill material requirements are not applicable. However, the design requirements for foundations and structure that support the secondary containment components are adequately addressed in the Structural Design Criteria, Excavation and Backfill, and Material Testing documents. These documents contain adequate industry standards for designing, selecting and testing fill materials, placing and compacting backfills, and testing to ensure adequate compaction below and around the foundations of the structures. The foundations evaluation is included above in the section for Elev. (-) 21'-0".
	The design or operation (e.g., diking & curbing) prevents run-on or infiltration of precipitation into the Secondary Containment system unless the collection system has sufficient excess capacity (25 yr rainfall) to contain the run-on precipitation.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.	The Basis of Design document requires the design to provide adequate measures to prevent run-on or infiltration of precipitation. It should be noted that the coated bermed area of Room L-0304 at Elev. 48'-0", surrounding the LVP Caustic Scrubber (LVP-SCB-00001) provides the secondary containment. Room L-0304F is located inside the LAW Vitrification Building at Elev. 48'-0", where it is protected from direct precipitation by the building structure as shown in the general arrangement drawings, therefore, this requirement does not apply.
Infiltration	The design includes an external moisture barrier or other means to prevent moisture from entering the room.	Drawings listed above under References; 24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design.	The Basis of Design document requires the design include provisions to prevent external moisture intrusion. The secondary containment room L-0304F shown in the general arrangement drawings is inside the LAW Vitrification Building which shields it from precipitation and surface water percolation, therefore, this requirement does not apply.

Information Assessed		Source of Information	Assessment
Liner System	The containment area is free of cracks or gaps and the design discusses methods of their minimization.	24590-WTP-DB-ENG-01-001, Rev. 10, Basis of Design; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design; 24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas.	The Basis of Design document requires the liner system to be installed must be free of deficiencies such as cracks and gaps and its installation should be inspected and documented by an independent qualified installation inspector or independent qualified professional engineer trained and experienced in installation of tank systems. The Secondary Containment Design document provides current adequate design requirements and codes and standards to design leak tight liners. This document includes appropriate details for installation of special protective coatings free of cracks and gaps. The Material Selections and Special Protective Coatings documents provide adequate requirements for the secondary containment protective coating materials.
	The design has considered the compatibility of the concrete liner or coatings and waste and presents information on coatings planning to be used from the manufacturer addressing compatibility with the stored waste. The lining or coating must prevent the waste from migrating into the concrete.	24590-WTP-PER-M-02-001, Rev. 3, Material Selections for Building Secondary Containment/Leak Detection; 24590-WTP-3PS-AFPS-T0006, Rev. 1, Specification for Field Applied Special Protective Coatings for Secondary Containment Areas; 24590-WTP-PER-CSA-02-001, Rev. 8, Secondary Containment Design.	The Material Selections and Special Protective Coating documents contain general information on the compatibility of planned secondary containment special protective coatings with the waste. The Secondary Containment Design and Special Protective Coatings documents provide standard installation details for the special protective coatings. Surface preparations and applicable details such as corner coving on floor/wall and wall/wall joints as described and/or shown in the aforementioned documents will ensure leak-tight protective coating layer that will stop the migration of the waste into the concrete.

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